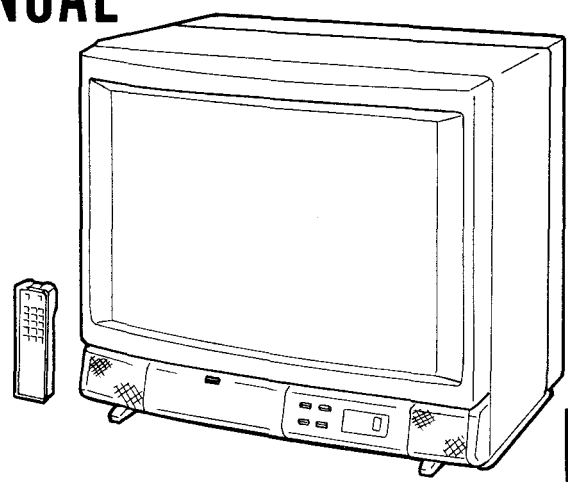
KV-20TS10

RM-758

SERVICE MANUAL

US Model

Chassis No. SCC-A05Y-A



P3A CHASSIS

Note: The service manual for RM-758 has been issued separately.

MODELS OF THE SAME SERIES	
KV-20TS20	KV-2074RA/2094RA
KV-20TX12	
KV-2040R	

SPECIFICATIONS

Television system	American TV standards
Channel coverage	VHF: 2–13
	UHF: 14–69
	Cable TV: 1–125
Picture tube	Microblack Trinitron tube
	20-inch picture measured diagonally
	21-inch picture tube measured diagonally
Power requirements	120 V AC, 60 Hz
Power consumption	130W (max.)
	5W (in standby condition)
Accessories supplied	
	Remote Commander RM-758 with 2 size AA batteries
	Telescopic dipole antenna
	Antenna connector (300 ohms to 75 ohms matching transformer)
Optional accessories	
	U/V mixer EAC-66

Design and specifications subject to change without notice.

MICROFILM

TRINITRON® COLOR TV

SONY®

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WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).
   Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

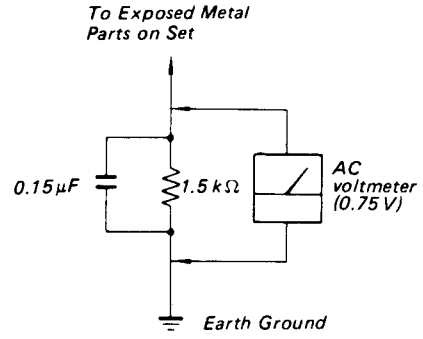


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60–100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

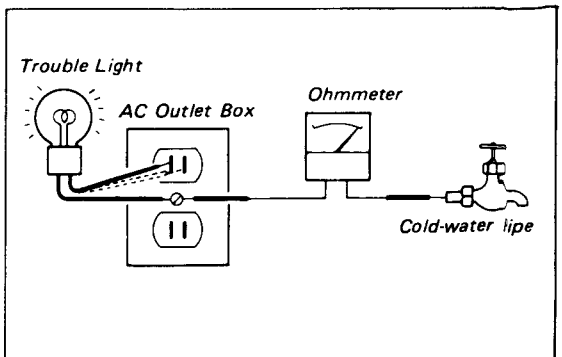
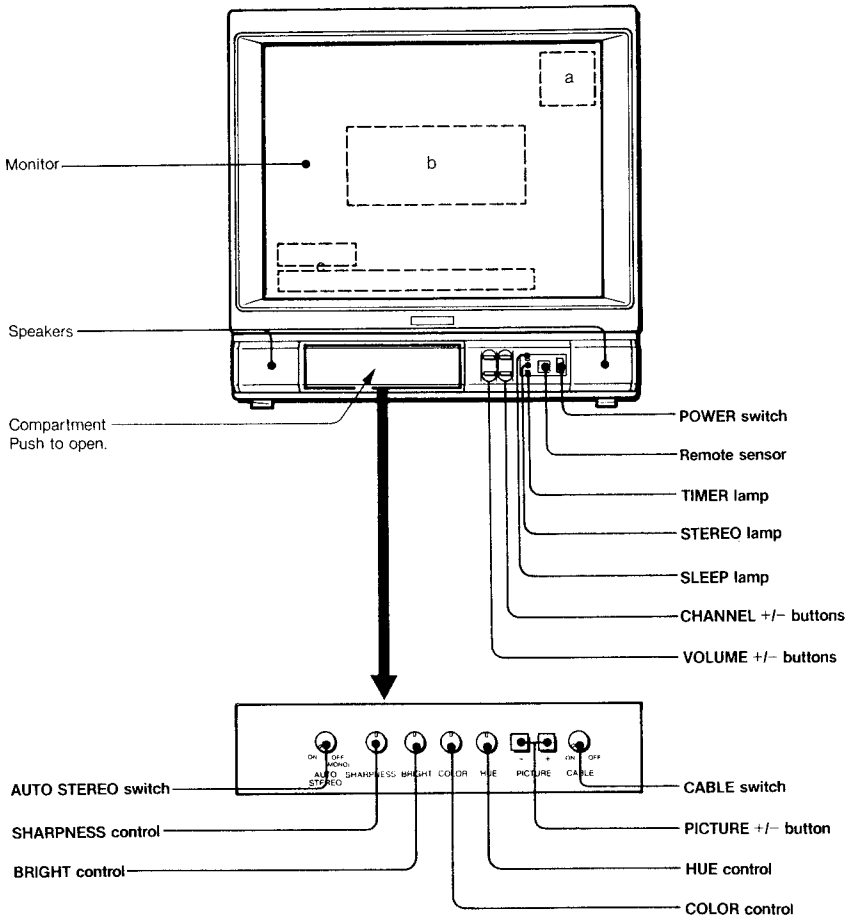


Fig. B. Checking for earth ground.

SECTION 1
GENERAL

1-1. Location of Controls

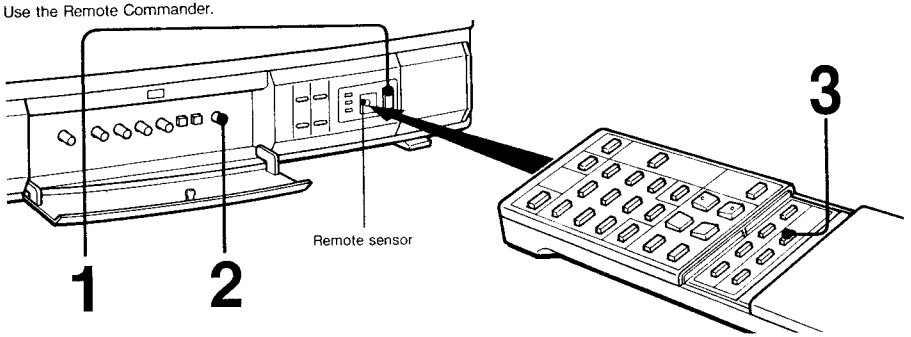
Front



On-screen displays
a) • Channel numbers
• MTS mode indication
• "MUTING" or "SLEEP" mode indication
b) "AUTO PROGRAM", "TIMER" or "TIMER BLOCK" indication
c) • Bar display for volume or picture adjustment
• Current time for Timer/Block.

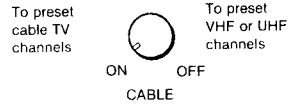
1-2. Presetting TV Channels

Use the Remote Commander.



1 **Turn the TV on.**

2 **Set CABLE to the correct position.**



3 **Press AUTO PROG.**

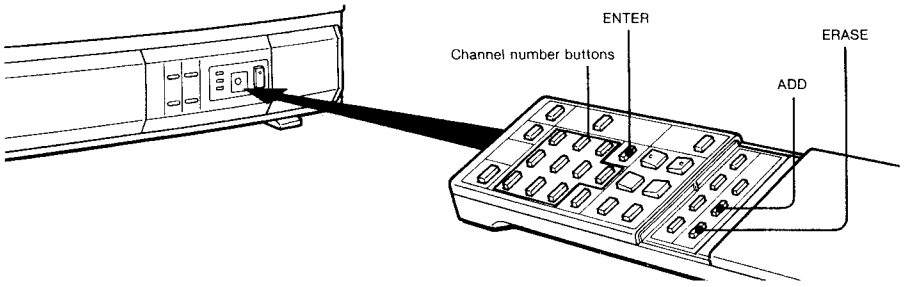
"AUTO PROGRAM" is displayed on the screen and receivable channels (other than the channels already preset) will be preset in numerical sequence. The channels previously preset remain in the unit's memory.
When no more channels can be found, the programming stops and the lowest numbered channel is displayed.

Receivable channels of this TV are:
VHF: 2-13
UHF: 14-69
Cable: 1-125

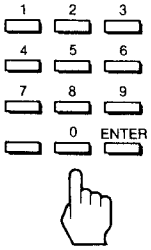
To check preset channels
Press CHANNEL +/–.

To add the channels that could not be preset with this automatic programming because their signal strength was too weak, or **to erase unnecessary channels**, follow the steps in "To preset only the desired channels" on the next page.

To preset only the desired channels
—manual programming



1 **Press the channel number button(s) and then ENTER to select the channel to be added.**



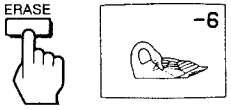
2 **Press ADD.**

A "+" appears for a moment to the left of the on-screen channel number display. This channel has now been added to the channel scan memory.

To add other channels
Repeat steps 1 to 2.

To erase unnecessary channels

1 **Select the channel to be erased.**
2 **Press ERASE.**
A "–" appears for a moment to the left of the on-screen channel number display. This channel has now been erased from the channel scan memory.



Repeat steps 1 and 2 for other channels to be erased.

When a VHF or UHF channel is erased
The cable TV channel with the same number is also erased and vice versa.

Pay cable TV systems use scrambled or encoded signals and require special converters (decorders) in addition to the normal cable connection.

Cable TV channel chart*
Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to the chart below.

Number on this TV	1	5	6	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Corresponding CATV channel	A-8	A-7	A-6	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q

31	32	33	34	35	36	37	38	39	.....	93	94	95	96	97	98	99	100	101	102	.....	123	124	125
R	S	T	U	V	W	W+1	W+2	W+3	.....	W+57	W+58	A-5	A-4	A-3	A-2	A-1	W+59	W+60	W+61	.....	W+82	W+83	W+84

Check with your local cable TV company for more complete information on the available channels.

* The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

1-3. Timer/Block

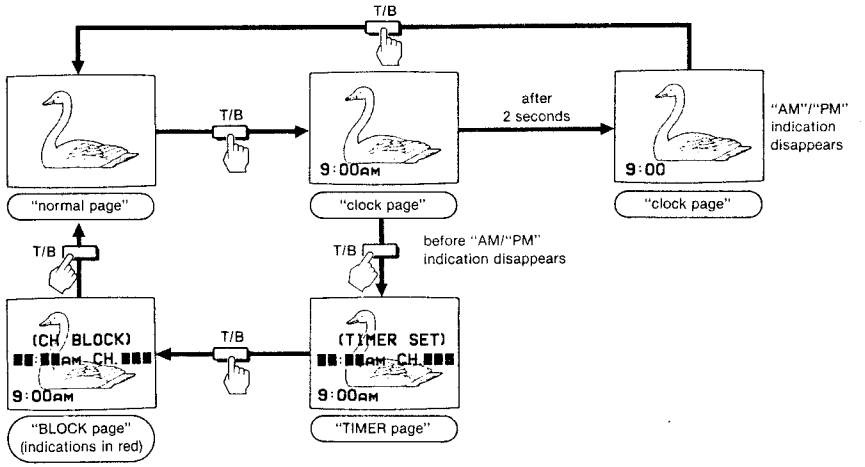
Available functions

Internal clock	Once the internal clock is set, the current time will appear on the screen. It is necessary to set the clock correctly to activate the program start TIMER and channel BLOCK.
Program start TIMER	Makes a program of your choice appear on the screen automatically at the desired time.
Channel BLOCK	Blocks a channel from appearing on the screen for 12 hours. Use channel BLOCK to prevent children from watching undesirable programs.

The buttons used for the above functions are located on the Remote Commander.

To set the internal clock, program start TIMER and channel BLOCK, you must summon the corresponding "pages": "clock page," "TIMER page" and "BLOCK page."

To change the "pages," press TIMER/BLOCK.
TV stands for the TIMER/BLOCK button.

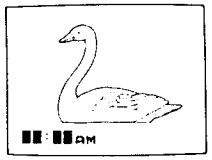


- All settings will be erased from the unit's memory if the unit is unplugged, or if a power failure occurs.
- The TIMER and BLOCK will operate only if the clock is set correctly.
- If the TIMER and BLOCK are set for overlapping times on the same channel, the blocked channel will appear on the screen at the time set on the TIMER.

How to Set the Internal Clock

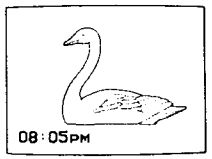
Example: To set the clock to 8:05 PM

1 Press TIMER/BLOCK once to change from "normal page" to "clock page."

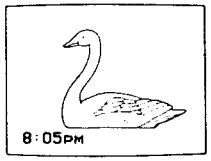


"clock page"

2 Press 0, 8, 0, 5, AM/PM (0 necessary).



3 If you have performed the operation correctly, press ENTER.
The numbers will "wink" to indicate that the clock has been set. (The 0 in front will disappear.)



If you have made a mistake, press CLEAR and return to step 2.

The "AM/PM" indication will disappear after 2 seconds.

To summon "TIMER page," press TIMER/BLOCK before the "AM"/"PM" indication disappears.
To return to "normal page," press TIMER/BLOCK after the "AM"/"PM" indication has disappeared.

To reset the clock, summon "clock page" and press CLEAR before the "AM"/"PM" indication disappears. Then follow the steps above from step 2.

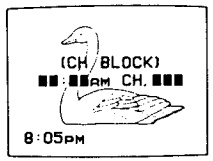
12:00 AM stands for midnight.
12:00 PM stands for noon.

How to Set the Channel BLOCK

Make sure that the clock has been set correctly before setting the channel BLOCK.

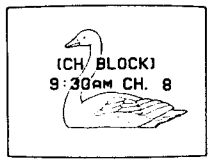
Example: To set the BLOCK for a program which begins at 9:30 AM on channel 8

1 Press TIMER/BLOCK three times to change from "normal page" to "BLOCK page."



"BLOCK page"
(indications in red)

2 Press 0, 9, 3, 0, ENTER (0 necessary).
Numbers will "wink" to indicate that the time has been set.
Press 8, ENTER (0 not necessary).
Numbers will "wink" to indicate that the channel has been set.



The BLOCK has now been set.
If you have made a mistake, press CLEAR and return to step 2.

At the preset time, the picture of the selected channel will be blocked from view and the sound will be muted. A red "BLOCKED" indication will appear on the screen while the channel is blocked.
Normal reception will be resumed after 12 hours.

To return to normal reception while the channel is blocked, recall "BLOCK page" and press CLEAR.

The BLOCK setting blocks a specified channel for the same 12-hour period everyday.

To clear BLOCK setting, summon "BLOCK page" and press CLEAR.
To reset, clear the setting and follow the steps above from step 2.

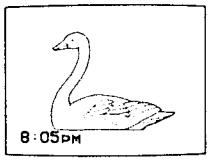
Timer Block

How to Set the Program Start TIMER

Make sure that the clock has been set correctly before setting the program start TIMER.

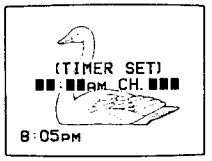
Example: To set the TIMER for a program which begins at 10:30 PM on channel 12

1 Press TIMER/BLOCK once to change from "normal page" to "clock page."



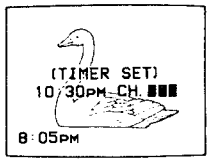
"clock page"

2 Press TIMER/BLOCK before the "AM"/"PM" indication disappears and summon "TIMER page."

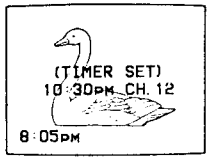


"TIMER page"

3 Press 1, 0, 3, 0, AM/PM, ENTER.
Numbers will "wink" to indicate that the time has been set.



4 Press 1, 2, ENTER (0 not necessary).
Numbers will "wink" to indicate that the channel has been set.



The TIMER lamp will light up to indicate that the TIMER has been set.
If you have made a mistake, press CLEAR and return to step 3.

At the preset time, the selected channel will appear on the screen and the TIMER lamp will go out. The TIMER will operate whether you are watching a TV program or a VCR playback, or even if you have turned off the TV.

If no button is pressed within 2 hours after the preset time, an "OFF" indication will appear on the screen for 1 minute. If a button is still not touched during the 1 minute, the TV will turn off automatically as a safety precaution.

The TIMER operates only once, but the time and the channel will remain in the unit's memory.
If you want to preset the same channel at the same time for a future date, press TIMER OFF/REPEAT. The TIMER lamp will light up to indicate that the TIMER has been reactivated.

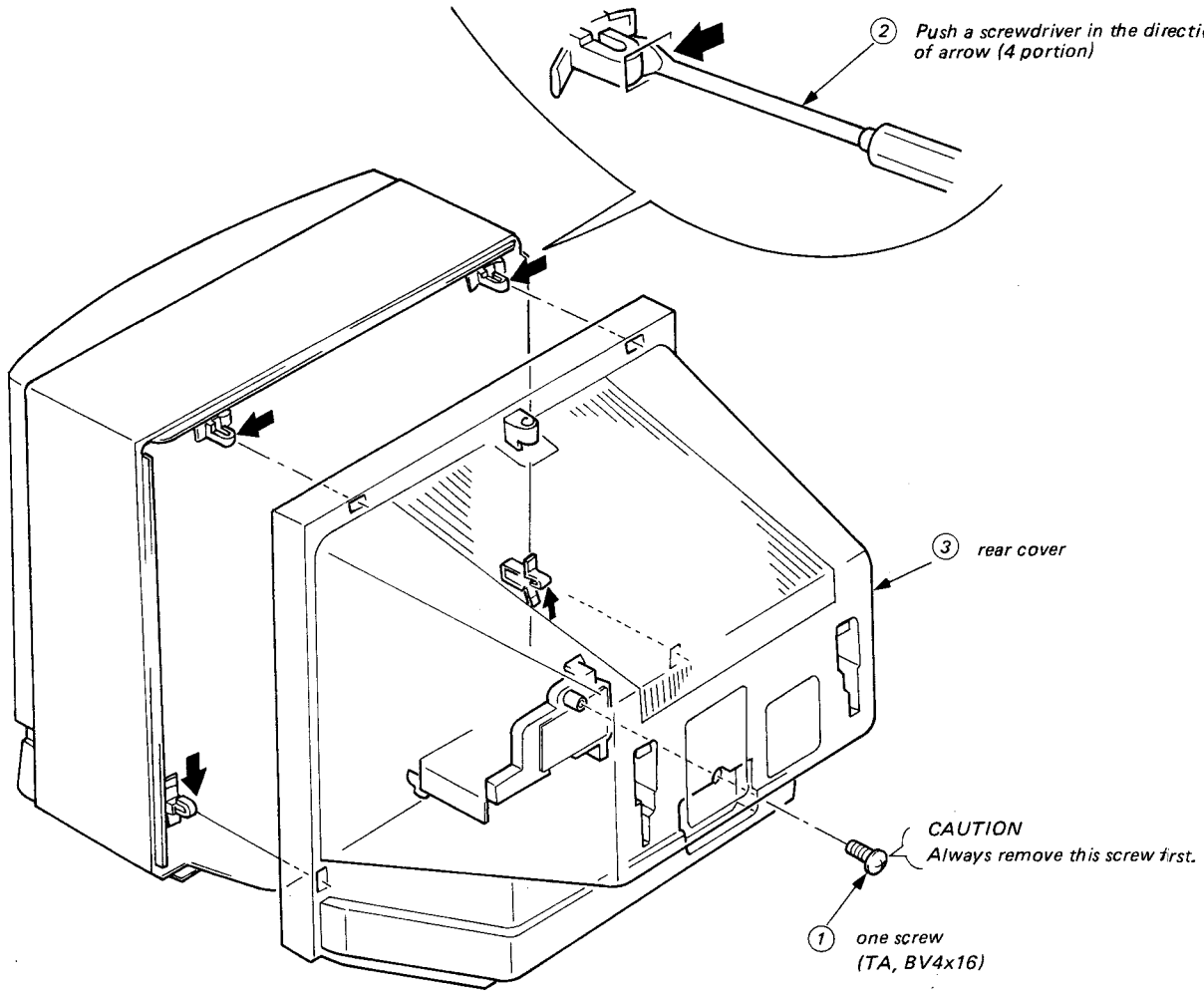
If you want to deactivate the TIMER, press TIMER OFF/REPEAT again so that the TIMER lamp goes out.
It is not necessary to summon "TIMER page" to use the TIMER OFF/REPEAT button. Furthermore, this button is effective even if the TV has been turned off.

***To clear the TIMER** setting, summon "TIMER page" and press* CLEAR.
To reset, clear the setting and follow the steps from step 3.

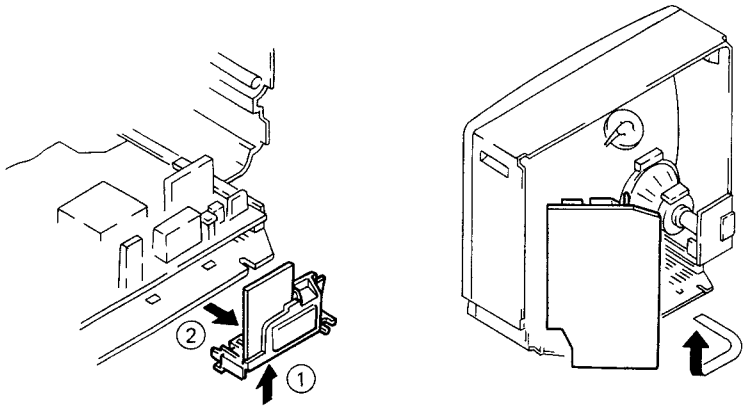
SECTION 2
DISASSEMBLY

2-1. REAR COVER REMOVAL

Note: Follow the disassembly procedure in the numerical over given.

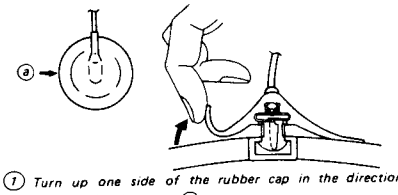

② Push a screwdriver in the direction of arrow (4 portion)
③ rear cover
CAUTION
Always remove this screw first.
① one screw
(TA, BV4x16)

SERVICE POSITION

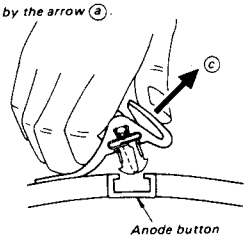


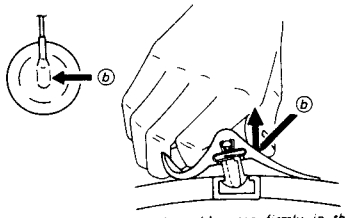
2-2. PICTURE TUBE REMOVAL

• Removing Procedures



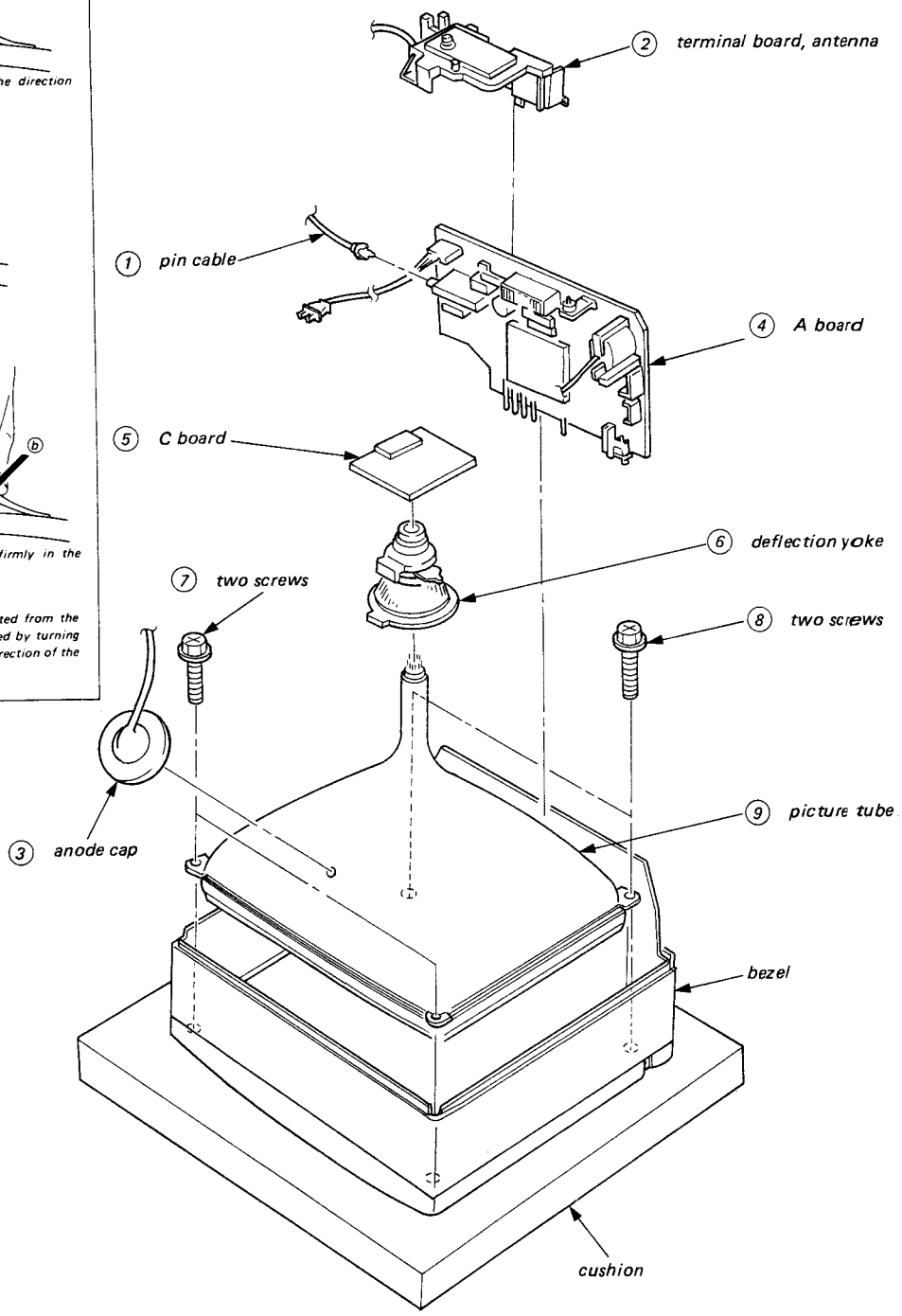
① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.





② Using a thumb, pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.

③ When one side of the rubber cap is separated from the anode button, the anode cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.



SECTION 3
SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switch should be set as follows unless otherwise noted:

PICTURE control ..... MAXIMUM

BRIGHTNESS control ..... MAXIMUM

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. White Balance
5. Sub Brightness

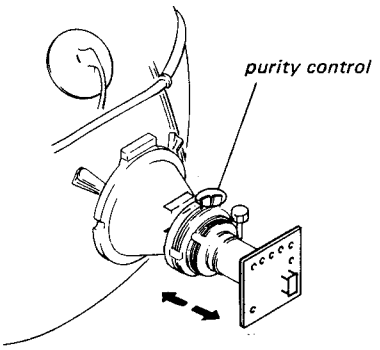
Note: Test Equipment Required.
1. Color-bar/Pattern Generator
2. Degausser

3-1. BEAM LANDING

Preparation:

- Feed in the white pattern.
- Before starting, degauss the entire screen.

1. Loosen deflection yoke screw.
2. Adjust purity control as shown in Fig. 3-1.
3. Slide deflection yoke as far forward as it will go.
4. Turn the raster signal of the pattern generator to red.
5. Adjust purity control to center vertical red band as shown in Fig. 3-2.
6. Slide deflection yoke back for a uniform red screen.
7. Check green and blue rasters for uniformity by performing the same way as steps 4, 5 and 6.
8. Tighten the deflection yoke screw.
9. Check if mislanding appears at corners a–d as shown in Fig. 3-3. If mislanding is observed, correct it as shown in Fig. 3-3.
10. Confirm that beam landing is correct when the receiver is faced in all directions.



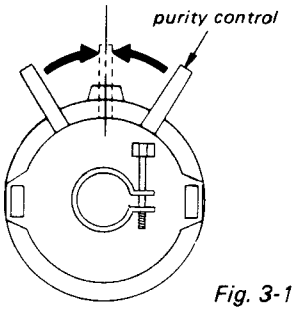


Fig. 3-1.

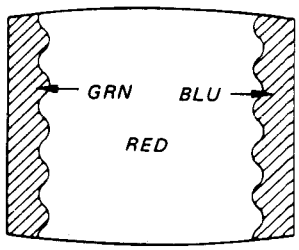


Fig. 3-2.

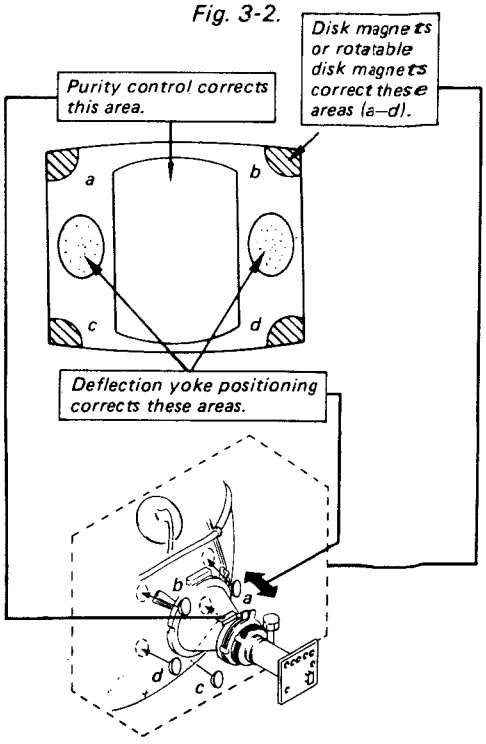


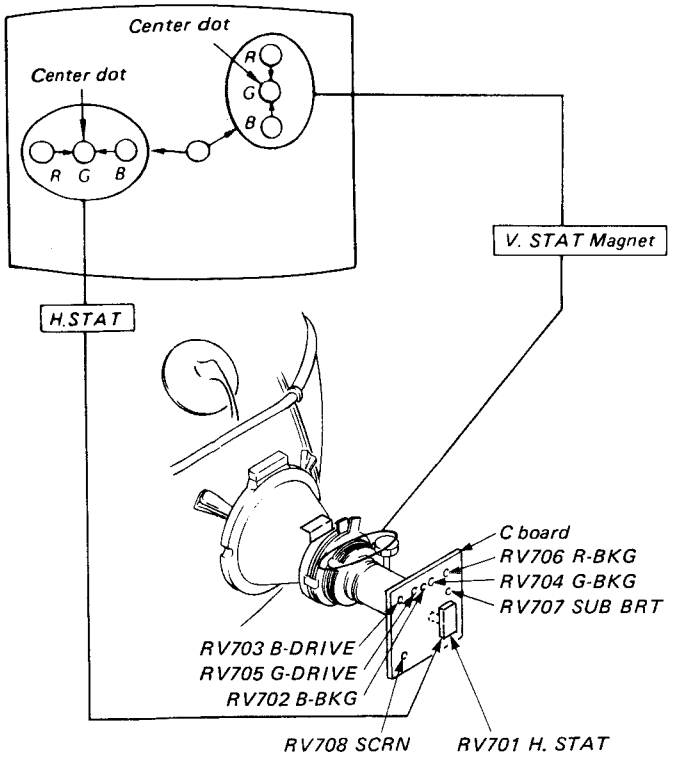
Fig. 3-3.

3-2. CONVERGENCE

Preparation:

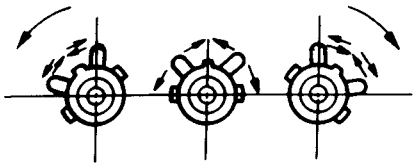
- Before starting, perform FOCUS, H. SIZE and V. SIZE adjustments.
- Set BRIGHTNESS control to fully counterclockwise.
- Feed in the dot pattern.

(1) Horizontal and Vertical Static Convergence

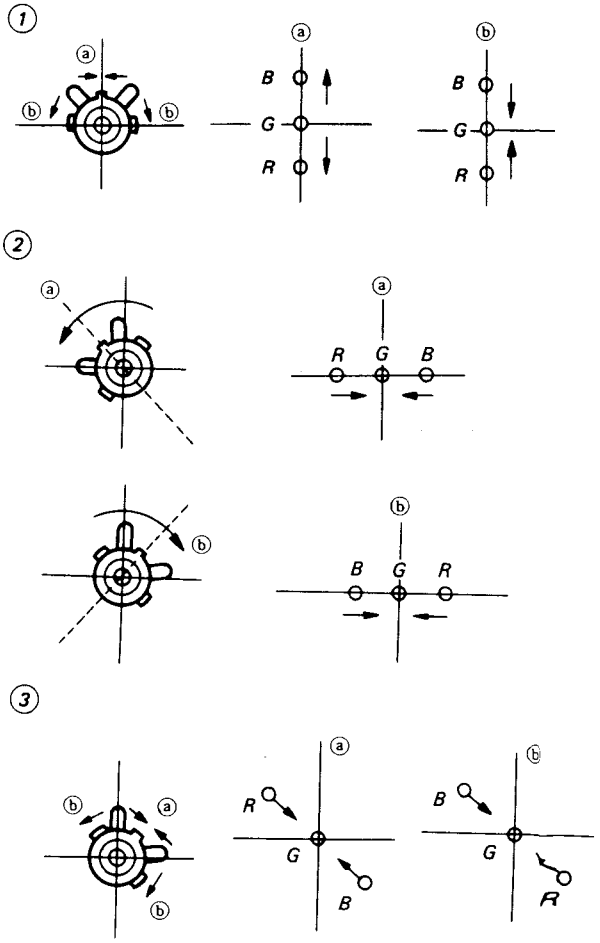


1. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen (Horizontal movement)
2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen (Vertical movement)
3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below. (In this case, H. STAT VR and V. STAT magnet effect each other.)

- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



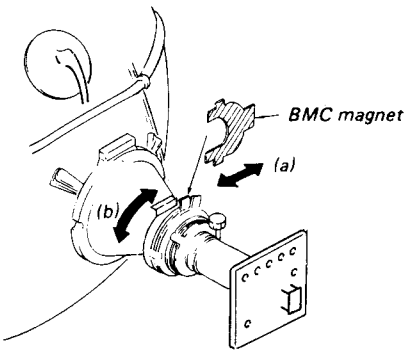
4. When the V. STAT magnet is moved in the direction of arrow ⓐ and ⓑ , Red, Green and Blue dots move as shown below.



If blue dot does not coincide with red and green dots, perform following steps.

Move BMC magnet (a) to correct insufficient H. static convergence.
Rotate BMC magnet (b) to correct insufficient V. static convergence.

In either case, repeat Beam Landing Adjustment.

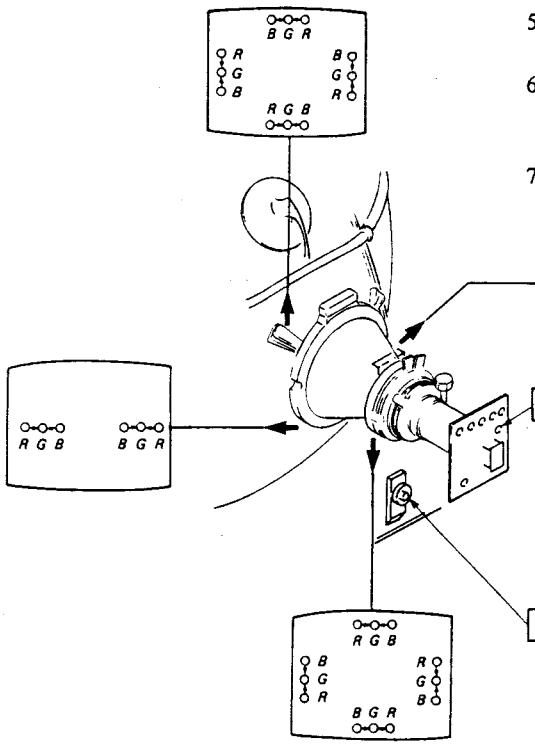


(2) Dynamic Convergence Adjustment

Preparation:

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown below.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.



3-4. WHITE BALANCE

Feed in the cross-hatch pattern.

1. Set BRIGHTNESS and PICTURE controls to minimum.
2. Turn RV703 (B. DRIVE) and RV705 (G. DRIVE) fully counterclockwise.
3. Set RV706 (R. BKG), RV704 (G. BKG), RV702 (B. BKG) and RV707 (SUB BRT) to mechanical center.
4. Turn RV708 (SCREEN) slowly to obtain a faintly visible cross-hatch. Note the color that first becomes visible by turning RV708. Do not turn a BKG control for this color.
5. Adjust the other two BKG controls for best white balance (neutral gray) of the faint cross-hatch.
6. Set BRIGHTNESS and PICTURE controls to maximum. Observe the screen and adjust the DRIVE controls for best white balance.
7. Repeat Steps 1 through 6 several times.

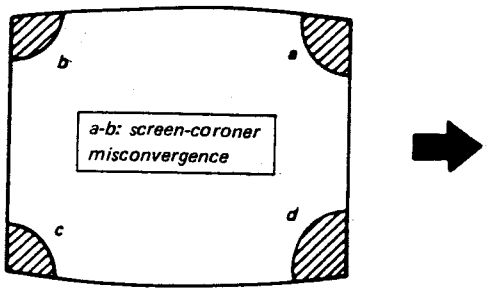
3-5. SUB BRT (RV707)

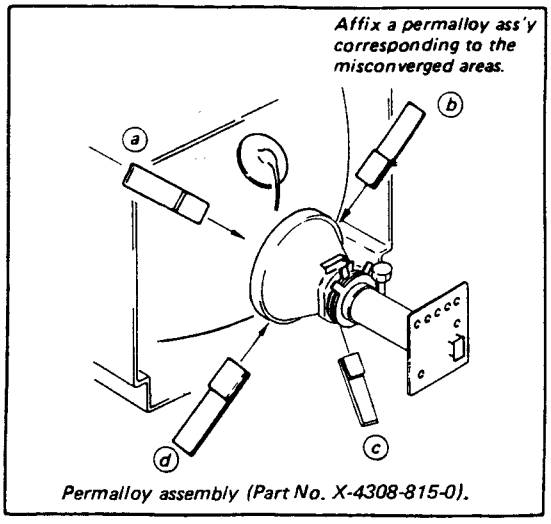
1. Feed in a cross-hatch pattern.
2. Set PICTURE and BRIGHTNESS to minimum.
3. Turn RV707 (SUB BRT) slowly to obtain a faintly visible cross-hatch.

3-3. FOCUS *(G4)*

Adjust FOCUS control for a best picture.

(3) Screen-corner Convergence





SECTION 4
SAFETY RELATED ADJUSTMENTS

⊠ R381 CONFIRMATION METHOD (HOLD-DOWN COMFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with ◪ on the schematic diagram).
IC301, PM501, R378, R379, R382, R512, R381

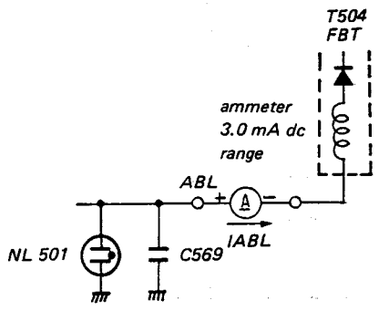
(1) Preparation before confirmation

1. *Turn the POWER switch ON, and receive entirely white signals and set the PICTURE and BRIGHTNESS controls to maximum.*
2. *Confirm that the voltage of the TP-85 is more than 13 V dc when the set is operating normally with 120 V ac supply.*

(2) Hold-down operation confirmation

1. *Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to 1400 ± 20 μA with PICTURE and BRIGHT etc controls.*
2. *Apply DC voltage of over 13.0 V gradually to the TP85 via 1T40 from the DC stavilized power source. Confirm that the minimum voltage is less than 18.00 V dc whereby the raster disappears during operation of hold-down circuit.*
   Note: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.
3. *Turn the POWER switch ON, and receive dot signals and adjust ABL current to 230 ± 10 μA with PICTURE and BRIGHT etc controls.*
4. *Apply DC voltage of over 13.0 V gradually to TP85 via 1T40 from the DC stavilized power source. Confirm that the minimum voltage is less than 19.34 V dc whereby the raster disappears during operation of hold-down circuit.*
   Note: When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

(3) Hold-down readjustment
When step (2) is not satisfied, readjustment should be performed by altering the resistance value of R381 (a component marked with ⊠).



** Use a digital multimeter whose input impedance is over 100 MΩ when confirming the voltage of TP85.*

CONFIRMATION WHEN REPLACING T504 (FLYBACK TRANSFORMER)

The following adjustments should always be performed with reference to whether an X-ray radiation control circuit is connected or not, when replacing T504 (FLYBACK TRANSFORMER).

** This check is to be performed when T504 (FLYBACK TRANSFORMER) only is replaced, and has no relation to the hold-down circuit readjustment for replacement of parts marked ◪ .*

(1) Connection confirmation

1. *Turn the POWER switch ON, and receive entirely white signals and set the PICTURE and BRIGHTNESS controls to maximum.*
2. *When the set is operating normally with 120 V ac supply, confirm the voltage of the TP85 is over 13 V dc.*

+B VOLTAGE CONFIRMATION

The following adjustments should always be performed when replacing IC601.

(1) The +B voltage confirmation

1. *Supply 130 $^{+1}_{-0}$ V ac to with variable auto-transformer.*
2. *Receive monoscope signals.*
3. *Set the PICTURE control in to 80% and BRIGHTNESS control in to DETENT.*
4. *Confirm the voltage of TP91 is less than 138.6 V dc.*
5. *If step 4 is not satisfied, replace IC601 and repeat above steps.*

PICTURE BLANKING CONFIRMATION

The following adjustment should always be performed when replacing the following components (marked with ◪ on the components circuit).
Regrading components of ⊠ R383.
R380, R341, D506, IC301, PM501, R383, R378, R379, R382

1. *Turn the POWER switch ON, and receive monoscope signal.*
2. *Set the PICTURE control into 80% and BRIGHTNESS control into DETENT.*
3. *Confirm that the picture is blanked till the voltage of TP91 is more than 108.0 V DC.*
4. *Confirm that the picutre is not blanked when INPUT voltage is more than 96 V AC.*

V. SIZE CONFIRMATION

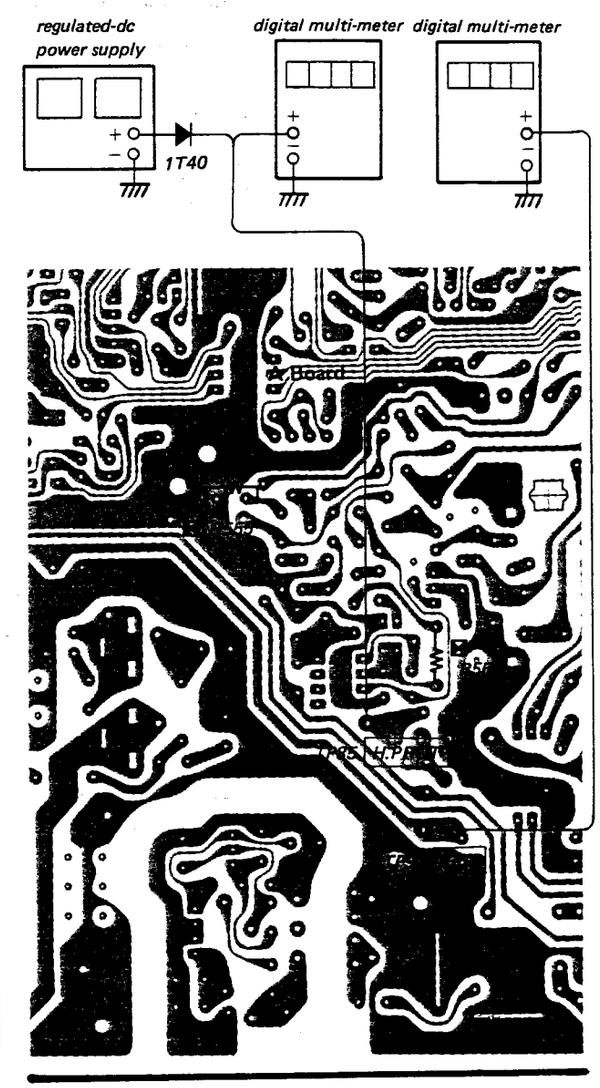
The following adjustments should always be performed when replacing the following components (marked with ◪ on the components circuit).
Regrading components of ⊠ R555 (V. SIZE).
DY, IC301, R514, R515, R555, R556, T504, RV507.

1. *Turn the POWER switch ON, and receive monoscope signal.*
2. *Set the PICTURE control in to 80% and the BRIGHTNESS control in to DETENT.*
3. *Adjust RV507 (V. SIZE) so that the V. SIZE becomes minimum, and confirm that the raster size is 22 cm or more.*

H. SIZE CONFIRMATION

The following adjustments should always be performed when replacing the following components (marked with ◪ on the components circuit).
Regrading components of ⊠ R551 (H. SIZE).
C563, C565, DY, R551, R554, RV506, T504.

1. *Turn the POWER switch ON, and receive monoscope signal.*
2. *Set the PICTURE control in to 80% and the BRIGHTNESS control in to DETENT.*
3. *Confirm that the H. SIZE at minimum should not exceed 16.4 frames by adjusting RV506 (H. SIZE).*



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RV507.
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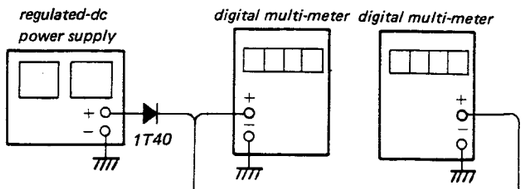
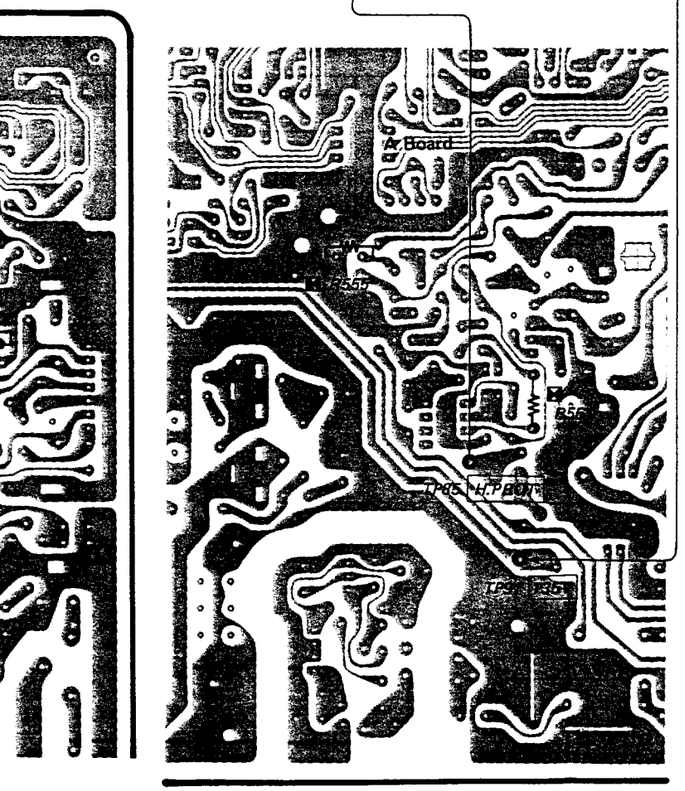
V. SIZE be-
raster size is

H. SIZE CONFIRMATION

The following adjustments should always be performed when replacing the following components (marked with ◪ on the components circuit).
Regrading components of ◪ R551 (H. SIZE).
C563, C565, DY, R551, R554, RV506, T504.

1. *Turn the POWER switch ON, and receive monoscope signal.*
2. *Set the PICTURE control in to 80% and the BRIGHTNESS control in to DETENT.*
3. *Confirm that the H. SIZE at minimum should not exceed 16.4 frames by adjusting RV506 (H. SIZE).*

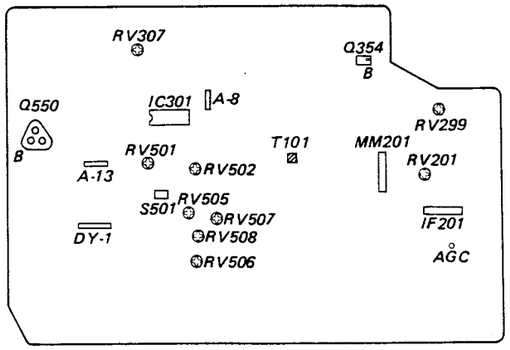




SECTION 5
CIRCUIT ADJUSTMENTS

5-1. A BOARD ADJUSTMENTS

A BOARD



BAR POSITION ADJUSTMENT (T101)

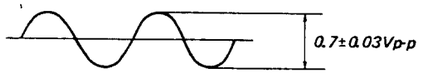
1. *Receive a color-bar signal.*
2. *Set the PICTURE control to maximum.*
3. *Adjust T101 to the point where the arrow indicate.*

RF AGC ADJUSTMENT (IF201)

1. *Receive an off-air signal.*
2. *Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.*

MPX LEVEL ADJUSTMENT (RV201)

1. *Receive 400Hz (100% modulation) sound signal.*
2. *Connect an oscilloscope to PIN (2) of MM201.*
3. *Adjust RV201 so that the MPX level is 0.7 ±0.03 Vp-p.*

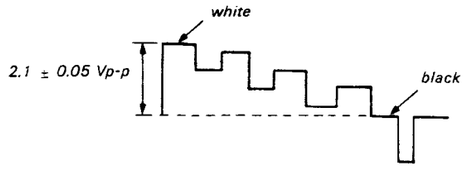


AUDIO BALANCE ADJUSTMENT (RV299)

1. *Receive monoral signal.*
2. *Connect the dual-trace-oscilloscope at SP out Lch (A-6 connector) and Rch (A-17 connector).*
3. *Adjust RV299 so that Lch and Rch are same level.*

SUB CONTRAST ADJUSTMENT (RV307)

1. *Receive a color-bar signal.*
   PICTURE ..... MAX
   BRT ..... CENTER
   COLOR ..... MIN
2. *Short circuit between Base of Q354 and 9.3V Line with a jumper wire.*
3. *Draw A-8 – C-3 connector (C Board)*
4. *Connect an oscilloscope to the pin (4) of A-8 connector (blue out).*
5. *Adjust RV307 (SUB CONT) so that voltage is 2.1 ± 0.05 Vp-p.*

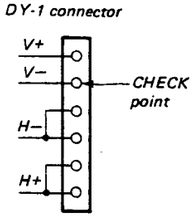


H. FREQ ADJUSTMENT (RV501)

1. *Receive an off air signal.*
2. *Short circuit between pin (48) of IC301 (H IN) and pin (36) of IC301 (VCC 2) with a jumper wire.*
3. *Connect the frequency counter across Base of Q550 and ground.*
4. *Adjust RV501 for 15,734 kHz ±50 Hz on the frequency counter.*
5. *Disconnect a jumper wire from IC301.*

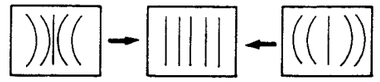
V. FREQ ADJUSTMENT (RV502)

1. *Receive an off air signal.*
2. *Short circuit between pin (47) of IC301 (V IN) and pin (36) of IC301 (VCC 2) with a jumper wire.*
3. *Connect the frequency counter across DY-1 connector (V. DY (–)) and ground.*
4. *Adjust RV502 for 55.0 ±0.3 Hz on the frequency counter.*
5. *Disconnect a jumper wire from IC301.*



PIN AMP ADJUSTMENT (RV505)

Adjust pin amplification with RV505



H. CENT, H. SIZE, ADJUSTMENT (A-13, RV506)

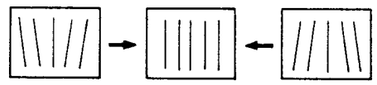
1. *Receive a cross-hatch signal.*
2. *Set PICTURE and BRT to normal.*
   Adjust H. CENT (H. CENT TAP = A-13), H. SIZE (RV506) for best picture.

V. CENT, V. SIZE ADJUSTMENT (S501, RV507)

1. *Receive a cross-hatch signal.*
2. *Set PICTURE and BRT to normal.*
3. *Adjust V. CENT (S501) and V. SIZE (RV507) for best picture.*

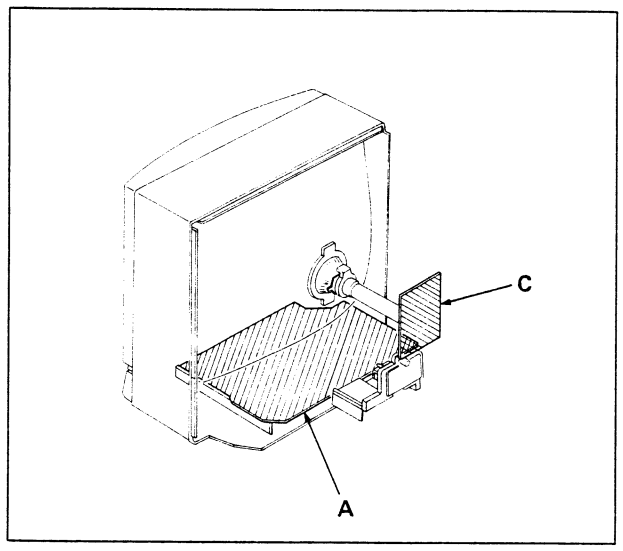
PIN PHASE ADJUSTMENT (RV508)

Adjust pin phase with RV508.



SECTION 6
DIAGRAMS

6-1. CIRCUIT BOARDS LOCATION



6-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAM

Note:

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance, which does not have one for rating electrical power is as follows.

  Pitch: 5mm
  Rating electrical power: 1/4W

- : nonflammable resistor.
- △ : internal component.
- : panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ⊠ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪ , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊠ and repeat the adjustment until the specified value is achieved. (Refer to R381, R383, R551 and R555 adjustments on page 12, 13.)
- When replacing the part in below table, be sure to perform the related adjustment.

Adjustment (⊠)	Part replaced (◪)
R381	IC301, PM501, R378, R379, R381, R382, R512
R383	IC301,D506,PM501,R341,R378 R379,R380,R382,R383
R551	C563, C565, DY, R551, R554, RV506, T504
R555	R514, R515, R555, R556, T504, RV507, DY, IC301

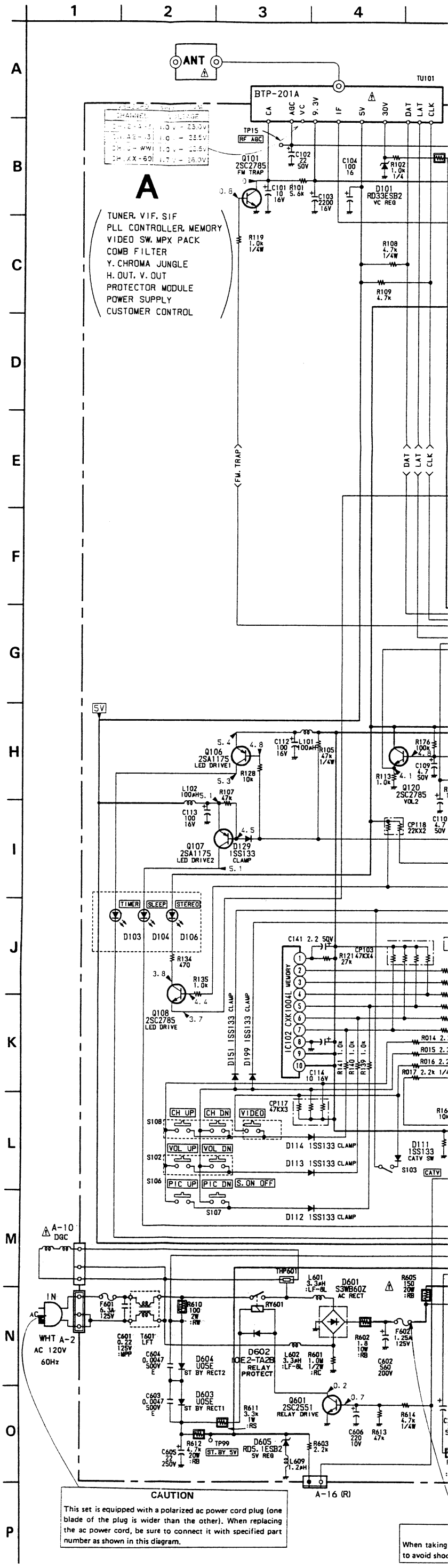
Reference information

RESISTOR : RN METAL FILM
: RC SOLID
: FPRD NONFLAMMABLE CARBON
: FUSE NONFLAMMABLE FUSIBLE
: FPMO NONFLAMMABLE WIREWOUND (OLD TYPE)
: RS NONFLAMMABLE WIREWOUND (NEW TYPE)
: RB NONFLAMMABLE CEMENT
: ADJUSTMENT RESISTER
COIL : LF-8L MICRO INDUCTOR
CAPACITOR : TA TANTALUM
: PS STYROL
: PP POLYPROPYLENE
: PT MYLAR
: MPS METALIZED POLYESTER
: MPP METALIZED POLYPROPYLENE
: ALB BIPOLAR
: ALT HIGH TEMPERATUNE
: AIR HIGH RIPPLE

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10MΩ digital multimeter.
- : adjustment for repair.
- Readigns are taken with color-bar signal input.

  MODE (AUDIO)
  No mak : BOTH
  ( ) : MAIN
  < > : SUB

- Voltage variations may be noted due to normal production tolerances.
- : B+ bus.
- : signal path



A-8 (W)

IF201 VIF. PACK IFE-450

IC101 M50439-519SP PLL CONTROLLER DISPLAY

IC103 BX-1398 DETECTOR

IC301 CXA1013S Y CHROMA JUNGLE

IC601 STR3035 135V REG

IC201 SI-4102

IC202 SI-4102

IC203 MB3110A VOL CONTROLLER

MM201 BX-1458

CM301

Q205 2SC2785 AGC CLAMP

Q121 2SC2785 VOL1

Q122 2SC2785 PIX1

Q502 2SA1175 SYNC SEP BUFFER

Q203 2SD788 9V REG

Q113 2SA1175 H PULSE

Q114 2SC2785 V PULSE 8.2k

Q115 2SC2785 R DISPLAY

Q116 2SC2785 G DISPLAY

Q103 2SC2785 BUFFER

Q119 2SC2785 V PULSE2

Q109 2SA1175 RESET

Q110 2SC2785 AC REF

Q112 2SD789 5V REG

Q371 2SC2785 PIC BUFFER

Q398 2SC2785 VCC 1 SW

Q301 2SC2785-F PIC ABL1

Q302 2SC2785-F PIC ABL2

Q303 2SC2785 PIC ABL3

Q550 2SC2688-K H DRIVE

D304 EL1Z VOL SHIFT

DS05 1SS133 VIDEO BLANK

DS06 1SS133 +B BLK

D118 1SS133 HP CLAMP

D119 1SS133 VP ADD

D120 1SS133 HP CLAMP

D121 1S1555 HP ADD

D122 1SS133 1/4W R CLAMP

D123 1SS133 1/4W G CLAMP

D606 10E2-TA2B BIAS

D115 RD4.3ESB1 LIMITTER

D128 1SS133 CLAMP

D350 1SS133 CLAMP

D513 ERC26-15S H OUT DAMPER

D514 ERD28-08S PIN DAMPER

D519 RGP01-17 H PROTECT

PM-501

S201 AUTO ST

S101 POW

T201

T299

X101

X301

CP104 220PX8

CP008 220PX8

CP009 220PX3

CP102 220PX4

CP106 22KX2

CP107 39PX3

CP108 220PX6

CP109 220PX4

CP112 22KX3

SP902 (L)

SP901 (R)

TP21 MPX OUT

TP12 DETOUT

TP98 9V

TP98B WTS 9V

TP47B BLUE OUT

TP91 135V

TP94 5V

TP93 9.3V

TP86 H.FREQ

S8501

SUB-BRT

SUB CONT RV307 470

RV201 10k BLK MPX LEVEL

RV301 10k :RS

RV302 20k HUE

RV303 20k COL

RV304 20k BRT

RV305 20k SHP

RV306 20k

RV307 470

RV501 100k 8φ FH

RV502 100k BLK FV

RV299 10k B

L203 8.2mH

L103 100mH

L104 3.9mH

L105 3.9mH

L106 3.9mH

L108 15mH

L109 15mH

L115 JW

L116 JW

L301 15mH

L501 1mH

L507 1mH

L508 4.7mH :LF-BL

L509 PMC

L510 MLC

L511 3.3mH

T101

T501 HOT

C331 100 16V

C201 100 16V

C204 0.0022 B

C214 10 50V

C355 0.0022 50V B

C520 4.7 50V :ALB

C521 220k

C522 390p

C309 50V

C208 10 50V

C209 10 50V

C214 10 50V

C215 10 50V

C211 47 16V

C139 47 16V

C135 1000p B

C136 1 50V :ALB

C137 50V :ALB

C315 10 16V :ALB

C316 0.47 50V :ALB

C317 22 16V :ALB

C318 0.001 B

C328 560

C301 0.47 50V

C305 0.47 50V

C303 100 16V

C321 0.01 B

C307 10k

C309 50V

C503 0.47 50V

C502 0.0068 100V :PT

C505 0.0047 100V :PT

C526 1.5M 1/4W

C527 1.8M 1/4W

C375 27k

C366 12k

C367 39k

C341 2.2k 1/4W

C342 2.2k 1/4W

C507 220p B

C508 0.047 F

C509 0.047 F

C510 0.0068 100V :PT

C511 0.033 100V :PT

C512 2.2 50V

C513 50V

C514 10 50V

C515 0.22 50V

C518 0.0047 B

C530 4.7 25V :ALB

C531 22 50V

C532 10 16V :ALB

C360 10 50V

C501 100 16V

C502 0.0068 100V :PT

C503 0.47 50V

C505 0.0047 100V :PT

C506 150 1/4W

C507 5.6k

C508 47k 1/4W

C509 0.047 F

C510 0.0068 100V :PT

C511 0.033 100V :PT

C512 2.2 50V

C513 50V

C514 10 50V

C515 0.22 50V

C518 0.0047 B

C530 4.7 25V :ALB

C531 22 50V

C532 10 16V :ALB

C360 10 50V

C550 0.47 50V

C551 470p B

C553 330p 500V B

C562 470p 500V B

C563 0.0075 1.4kV

C564 200V :MPP

C565 0.043 400V :PP

C566 4.7 50V :ALT

C567 0.001 500V B

C568 0.047 100V :PT

C571 0.0056 200V :PT

C581 470 1/4W :FPRD

C583 1/4W

C106 470 10V

C107 150p

C108 150p

C116 0.01 100V :PT

C118 0.01 100V :PT

C121 47 16V

C122 33 16V

C125 1.0k 4.5

C126 0.47 50V 5.6k

C128 39p

C133 36p

C136 1 50V :ALB

C137 50V :ALB

C140 0.0022 B

C143 0.01 100V :PT

C180 5.6k

C232 39p

C252 0.022 100V :PT

C253 2.2 160V

C254 2.2 100V

C291 22 50V

C292 10 100V

C293 0.022 100V :PT

C294 2.2 160V

C295 2.2 100V

C296 4.7 50V

C298 50V

C299 4.7 50V

C330 220 16V

C364 470 25V

C615 10 160V

C616 10 160V

C617 10 160V

C618 0.047 100V :PT

C250 22 50V

C251 10 100V

R103 10k 3W :RS

R125 1.0k 4.5

R124 1.0k

R142 10k

R143 10k

R240 4.7k

R241 100k

R206 1k

R208 4.7k

R204 33k

R207 33k

R217 1k

R358 100

R214 18k

R213 18k

R211 330

R231 100

R234 330

R233 330

R232 330

R221 470

R211 330

R328 560

R504 330

R503 180

R315 1.0k

R316 330

R304 270k

R319 1.0k

R318 1.0k

R320 1.0k

R340 12k

R306 47k

R399 JW

R307 10k

R309 330

R308 330

R375 27k

R367 39k

R366 12k

R525 1.5k

R524 1k

R522 4.7

R368 1.0k

R369 1.0k 1/4W

R359 15k

R336 4.7k

R305 82k 1/4W

R302 56k

R303 10k

R323 6.8k

R312 15k 1/4W

R313 15k 1/4W

R301 120k :RN ±1% 1/4W

R502 3.9k 3W :RS

R501 3.3k 3W :RS

R505 130k 1/4W :RN ±1%

R506 150 1/4W

R507 5.6k

R508 47k 1/4W

R509 27k 1/4W

R510 2.7k

R512 330

R513 130k :RN ±1%

R515 6.8k

R519 3.9k

R532 56k 1/4W

R330 5.6k

R361 10k

R362 56 2W :RS

R364 JW

R379 3.3k 3W :RS

R378 3.3k 3W :RS

R380 1.5k :FPRD

R383 1/4W

R535 1.5k :FPRD

R570 560 1W FPMO

R571 10k 1/2W :FPRD

R572 3.3k

R573 10k 1/2W :FPRD

R574 0.47 1W :RS

R579 680 :FPRD

R580 180 1W :RS

R581 470 1/4W :FPRD

R568 0.047 100V :PT

R398 3.3k

R397 27k

R371 10k

R361 10k

R329 100k

R350 47k

R334 470

R333 10k

R298 1.0k

R299 1.2k 1/4W

R294 1.2k 1/4W

R295 10k

R296 10k 1/4W

R297 100 :FPRD

R290 390 :FPRD

R291 12k 1/4W

R292 47 1/8W :FPRD

R293 27k

R253 27k

R251 47 1/8W :FPRD

R252 12k 1/4W

R250 390 :FPRD

R617 47 :FPRD

R618 470k

R615 12k 2W :RS

R616 3.3k 1/4W :FPRD

R001 2.2k

R006 560

R044 560

R022 560

R007 560

R008 560

R009 560

R031 560

R003 560

R013 560

R012 560

R011 560

R010 560

R002 560

R004 560

R005 560

R035 1.0k

R036 820

R037 820

R032 560

R030 560

R029 560

R028 3.3k

R027 2.2k

R026 2.2k

R117 2.2k

R025 2.2k

R024 2.2k

R034 5.6k

R182 680

R185 10k

R021 27k 1/4W

R040 15k 1/4W

R019 10k

R018 820

R020 10k

R175 100k 1/4W

R174 270k

R120 47k

R118 22k

R126 10k

R133 10k

R167 1M

R171 3.3k

R172 27k

R158 470k

R154 470k

R155 68k

R160 68k

R161 3.9k

R156 3.9k

R115 2.2k

R116 2.2k

R157 220 1/4W

R159 220 1/4W

R150 47k

R151 10k

R146 1.0k

R147 820

R149 3.3k

R148 22k

R152 22k

R153 8.2k

R181 820

R136 100

R132 390

R131 390

R527 1.8M 1/4W

R526 1.5M 1/4W

R522 4.7

R341 2.2k 1/4W

R342 2.2k 1/4W

R309 330

R308 330

R306 47k

R399 JW

R307 10k

R303 10k

R323 6.8k

R312 15k 1/4W

R313 15k 1/4W

R301 120k :RN ±1% 1/4W

R502 3.9k 3W :RS

R501 3.3k 3W :RS

R505 130k 1/4W :RN ±1%

R506 150 1/4W

R507 5.6k

R508 47k 1/4W

R509 27k 1/4W

R510 2.7k

R512 330

R513 130k :RN ±1%

R515 6.8k

R519 3.9k

R532 56k 1/4W

R330 5.6k

R361 10k

R362 56 2W :RS

R364 JW

R379 3.3k 3W :RS

R378 3.3k 3W :RS

R380 1.5k :FPRD

R383 1/4W

R535 1.5k :FPRD

R570 560 1W FPMO

R571 10k 1/2W :FPRD

R572 3.3k

R573 10k 1/2W :FPRD

R574 0.47 1W :RS

R579 680 :FPRD

R580 180 1W :RS

R581 470 1/4W :FPRD

R568 0.047 100V :PT

R398 3.3k

R397 27k

R371 10k

R361 10k

R329 100k

R350 47k

R334 470

R333 10k

R298 1.0k

R299 1.2k 1/4W

R294 1.2k 1/4W

R295 10k

R296 10k 1/4W

R297 100 :FPRD

R290 390 :FPRD

R291 12k 1/4W

R292 47 1/8W :FPRD

R293 27k

R253 27k

R251 47 1/8W :FPRD

R252 12k 1/4W

R250 390 :FPRD

R617 47 :FPRD

R618 470k

R615 12k 2W :RS

R616 3.3k 1/4W :FPRD

R001 2.2k

R006 560

R044 560

R022 560

R007 560

R008 560

R009 560

R031 560

R003 560

R013 560

R012 560

R011 560

R010 560

R002 560

R004 560

R005 560

R035 1.0k

R036 820

R037 820

R032 560

R030 560

R029 560

R028 3.3k

R027 2.2k

R026 2.2k

R117 2.2k

R025 2.2k

R024 2.2k

R034 5.6k

R182 680

R185 10k

R021 27k 1/4W

R040 15k 1/4W

R019 10k

R018 820

R020 10k

R175 100k 1/4W

R174 270k

R120 47k

R118 22k

R126 10k

R133 10k

R167 1M

R171 3.3k

R172 27k

R158 470k

R154 470k

R155 68k

R160 68k

R161 3.9k

R156 3.9k

R115 2.2k

R116 2.2k

R157 220 1/4W

R159 220 1/4W

R150 47k

R151 10k

R146 1.0k

R147 820

R149 3.3k

R148 22k

R152 22k

R153 8.2k

R181 820

R136 100

R132 390

R131 390

R527 1.8M 1/4W

R526 1.5M 1/4W

R522 4.7

R341 2.2k 1/4W

R342 2.2k 1/4W

C331 100 16V

C201 100 16V

C204 0.0022 B

C214 10 50V

C355 0.0022 50V B

C520 4.7 50V :ALB

C521 220k

C522 390p

C309 50V

C208 10 50V

C209 10 50V

C214 10 50V

C215 10 50V

C211 47 16V

C139 47 16V

C135 1000p B

C136 1 50V :ALB

C137 50V :ALB

C315 10 16V :ALB

C316 0.47 50V :ALB

C317 22 16V :ALB

C318 0.001 B

C328 560

C301 0.47 50V

C305 0.47 50V

C303 100 16V

C321 0.01 B

C307 10k

C309 50V

C503 0.47 50V

C502 0.0068 100V :PT

C505 0.0047 100V :PT

C526 1.5M 1/4W

C527 1.8M 1/4W

C375 27k

C366 12k

C367 39k

C341 2.2k 1/4W

C342 2.2k 1/4W

C507 220p B

C508 0.047 F

C509 0.047 F

C510 0.0068 100V :PT

C511 0.033 100V :PT

C512 2.2 50V

C513 50V

C514 10 50V

C515 0.22 50V

C518 0.0047 B

C530 4.7 25V :ALB

C531 22 50V

C532 10 16V :ALB

C360 10 50V

C550 0.47 50V

C551 470p B

C553 330p 500V B

C562 470p 500V B

C563 0.0075 1.4kV

C564 200V :MPP

C565 0.043 400V :PP

C566 4.7 50V :ALT

C567 0.001 500V B

C568 0.047 100V :PT

C571 0.0056 200V :PT

C581 470 1/4W :FPRD

C583 1/4W

C106 470 10V

C107 150p

C108 150p

C116 0.01 100V :PT

C118 0.01 100V :PT

C121 47 16V

C122 33 16V

C125 1.0k 4.5

C126 0.47 50V 5.6k

C128 39p

C133 36p

C136 1 50V :ALB

C137 50V :ALB

C140 0.0022 B

C143 0.01 100V :PT

C180 5.6k

C232 39p

C252 0.022 100V :PT

C253 2.2 160V

C254 2.2 100V

C291 22 50V

C292 10 100V

C293 0.022 100V :PT

C294 2.2 160V

C295 2.2 100V

C296 4.7 50V

C298 50V

C299 4.7 50V

C330 220 16V

C364 470 25V

C615 10 160V

C616 10 160V

C617 10 160V

C618 0.047 100V :PT

C250 22 50V

C251 10 100V

R103 10k 3W :RS

R125 1.0k 4.5

R124 1.0k

R142 10k

R143 10k

R240 4.7k

R241 100k

R206 1k

R208 4.7k

R204 33k

R207 33k

R217 1k

R358 100

R214 18k

R213 18k

R211 330

R231 100

R234 330

R233 330

R232 330

R221 470

R211 330

R328 560

R504 330

R503 180

R315 1.0k

R316 330

R304 270k

R319 1.0k

R318 1.0k

R320 1.0k

R340 12k

R306 47k

R399 JW

R307 10k

R309 330

R308 330

R375 27k

R367 39k

R366 12k

R525 1.5k

R524 1k

R522 4.7

R368 1.0k

R369 1.0k 1/4W

R359 15k

R336 4.7k

R305 82k 1/4W

R302 56k

R303 10k

R323 6.8k

R312 15k 1/4W

R313 15k 1/4W

R301 120k :RN ±1% 1/4W

R502 3.9k 3W :RS

R501 3.3k 3W :RS

R505 130k 1/4W :RN ±1%

R506 150 1/4W

R507 5.6k

R508 47k 1/4W

R509 27k 1/4W

R510 2.7k

R512 330

R513 130k :RN ±1%

R515 6.8k

R519 3.9k

R532 56k 1/4W

R330 5.6k

R361 10k

R362 56 2W :RS

R364 JW

R379 3.3k 3W :RS

R378 3.3k 3W :RS

R380 1.5k :FPRD

R383 1/4W

R535 1.5k :FPRD

R570 560 1W FPMO

R571 10k 1/2W :FPRD

R572 3.3k

R573 10k 1/2W :FPRD

R574 0.47 1W :RS

R579 680 :FPRD

R580 180 1W :RS

R581 470 1/4W :FPRD

R568 0.047 100V :PT

R398 3.3k

R397 27k

R371 10k

R361 10k

R329 100k

R350 47k

R334 470

R333 10k

R298 1.0k

R299 1.2k 1/4W

R294 1.2k 1/4W

R295 10k

R296 10k 1/4W

R297 100 :FPRD

R290 390 :FPRD

R291 12k 1/4W

R292 47 1/8W :FPRD

R293 27k

R253 27k

R251 47 1/8W :FPRD

R252 12k 1/4W

R250 390 :FPRD

R617 47 :FPRD

R618 470k

R615 12k 2W :RS

R616 3.3k 1/4W :FPRD

R001 2.2k

R006 560

R044 560

R022 560

R007 560

R008 560

R009 560

R031 560

R003 560

R013 560

R012 560

R011 560

R010 560

R002 560

R004 560

R005 560

R035 1.0k

R036 820

R037 820

R032 560

R030 560

R029 560

R028 3.3k

R027 2.2k

R026 2.2k

R117 2.2k

R025 2.2k

R024 2.2k

R034 5.6k

R182 680

R185 10k

R021 27k 1/4W

R040 15k 1/4W

R019 10k

R018 820

R020 10k

R175 100k 1/4W

R174 270k

R120 47k

R118 22k

R126 10k

R133 10k

R167 1M

R171 3.3k

R172 27k

R158 470k

R154 470k

R155 68k

R160 68k

R161 3.9k

R156 3.9k

R115 2.2k

R116 2.2k

R157 220 1/4W

R159 220 1/4W

R150 47k

R151 10k

R146 1.0k

R147 820

R149 3.3k

R148 22k

R152 22k

R153 8.2k

R181 820

R136 100

R132 390

R131 390

R527 1.8M 1/4W

R526 1.5M 1/4W

R522 4.7

R341 2.2k 1/4W

R342 2.2k 1/4W

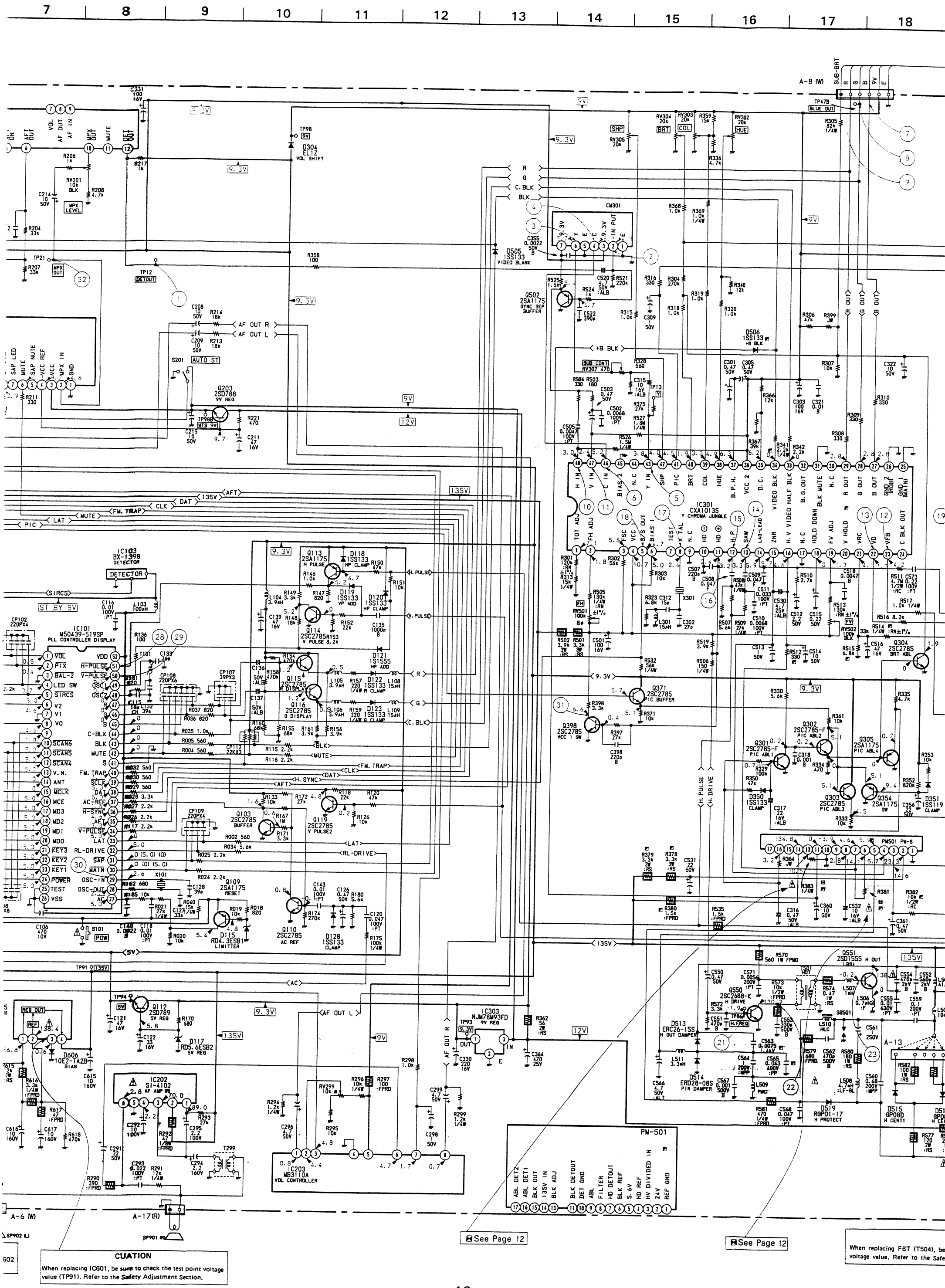
R309 330

R308 330

R306 47k

R399 JW

R307 10


7
8
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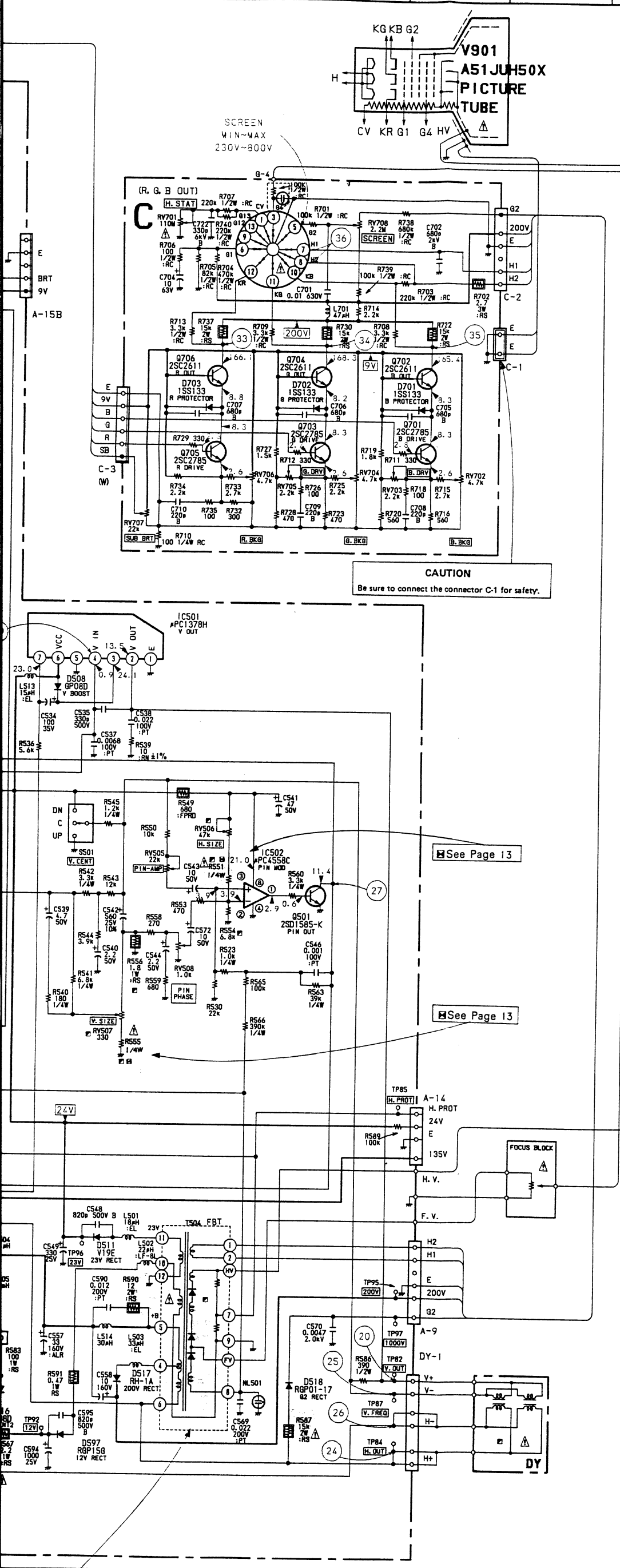
18
A-8 (W)
SUB-BRT
TP47B
BLUE OUT
R
G
B
9V
E
SHP
BRT
COL
HUE
RV304 20k
RV303 20k
RV302 20k
RV305 20k
R359 15k
R336 4.7k
R305 82k 1/4W
R
G
C. BLK
BLK
CM301
R368 1.0k
R369 1.0k 1/4W
C355 0.0022 50V B
D505 1SS133 VIDEO BLANK
R525 1.5k
C520 4.7 50V :ALB
R521 220k
R524 1k
4.7
Q502 2SA1175 SYNC. SEP BUFFER
C522 390p
R316 330
R304 270k
R319 1.0k
R318 1.0k
R315 1.0k
C309 50V
R340 12k
R320 1.0k
R306 47k
R399 JW
D506 1SS133 +B BLK
+B BLK
SUB CONT RV307 470
R328 560
R504 R503 330 180
C503 0.47 50V
C315 10 16V :ALB
TP13 (Y)
R375 27k
C502 0.0068 100V :PT
R527 1.8W 1/4W
C505 0.0047 100V :PT
R526 1.5M 1/4W
C301 0.47 50V
C305 0.47 50V
R307 10k
C322 10 50V
R366 12k
C303 100 16V
C321 0.01 B
R310 330
R309 330
R308 330
R367 39k
R341 2.2k 1/4W
R342 2.2k
R336 4.7k
R305 82k 1/4W
R
G
B
R OUT
G OUT
B OUT
TP98
9V
D304 EL1Z VOL SHIFT
C331 100 16V
R206 1k
R217 1k
RV201 10k BLK
R208 4.7k
C214 10 50V
WPX LEVEL
R204 33k
R207 33k
TP21
WPX OUT
TP12
DETOUT
R358 100
C208 10 50V
R214 18k
C209 10 50V
R213 18k
AF OUT R
AF OUT L
S201
AUTO ST
Q203 2SD788 9V REG
TP98B
MTS 9V
R221 470
C215 10 50V
C211 47 16V
R211 330
SAP LED
MUTE
SAP
NUTE
VCC
REF
VCC
WPX IN
GND
9.3V
9V
12V
135V
AFT
DAT
CLK
FM. TRAP
MUTE
LAT
PIC
IC103 BX-1398 DETECTOR
DETECTOR
SIRCS
ST BY 5V
C116 0.01 100V :PT
L103 100uH
CP102 220PX4
IC101 M50439-519SP PLL CONTROLLER DISPLAY
VOL
PIX
BAL-2
LED SW
SIRCS
V2
V1
VO
SCAN6
SCAN5
SCAN4
V. N.
ANT
MCLK
MCE
MD3
MD2
MD1
MD0
KEY3
KEY2
KEY1
POWER
TEST
VSS
VDD
H-PULSE
V-PULSE
OSC1
OSC2
R
G
B
C-BLK
BLK
MUTE
S
FM. TRAP
SCLK
DAT
AC-REF
H-SYNC
AFT
V-PULSE
LAT
RL-DRIVE
SAP
MAIN
OSC-IN
OSC-OUT
AC
T101
C133 39p
CP108 220PX6
CP107 39PX3
C115 18p CH 39p
C132
R037 820
R036 820
R035 1.0k
R005 560
R004 560
CP112 22KX3
C136 1 50V :ALB
C137 50V :ALB
R158 470k
R160 68k
R155 68k
R161 3.9k
R156 3.9k
R115 2.2k
R116 2.2k
R032 560
R030 560
R029 560
R028 3.3k
R027 2.2k
R026 2.2k
R017 2.2k
R002 560
R034 5.6k
R025 2.2k
R024 2.2k
R182 680
R185 10k
C128 39p
R021 27k 1/4W
C127 1/4W 33p
R040 15k
R019 10k
R018 820
R020 10k
D115 RD4.3ESB1 LIMITER
CP109 220PX4
Q103 2SC2785 BUFFER
R133 10k
R167 1M
R171 3.3k
Q113 2SA1175 H PULSE
D118 1SS133 HP CLAMP
R150 47k
R146 1.0k
R149 3.3k
R147 820
D119 1SS133 VP ADD
D120 1SS133 HP CLAMP
R151 10k
L104 3.9uH
C139 47 16V
R148 18k
Q114 2SC2785 V PULSE
R152 22k
R153 8.2k
C135 1000p B
H. PULSE
V. PULSE
R
G
C. BLK
BLK
MUTE
FM. TRAP
CLK
DAT
H. SYNC
AFT
AC
LAT
RL-DRIVE
R154 470k
D121 1S1555 HP ADD
Q115 2SC2785 R DISPLAY
Q116 2SC2785 G DISPLAY
L105 3.9uH
R157 220 1/4W
D122 1SS133 R CLAMP
L108 15uH
L106 3.9uH
R159 220 1/4W
D123 1SS133 G CLAMP
L109 15uH
R172 27k
R118 22k
R120 47k
Q119 2SC2785 V PULSE2
R126 10k
Q109 2SA1175 RESET
C143 0.01 100V :PT
C126 0.47 50V
R180 5.6k
C120 0.047 100V :PT
R175 100k 1/4W
Q110 2SC2785 AC REF
D128 1SS133 CLAMP
R174 270k
S101
POW
C140 0.0022 B
C118 0.01 100V :PT
C106 470 10V
SV
TP91
135V
TP94
5V
Q112 2SD789 5V REG
R170 680
C121 47 16V
C122 33 16V
D117 RD5.6ESB2 5V REG
REG OUT
REF
D606 10E2-TA2B BIAS
C615 10 160V
R616 3.3k 1/4W :FPRD
R617 47 :FPRD
R618 470k
C616 10 160V
C617 10 160V
IC202 SI-4102 AF AMP
C292 10 100V
R292 47 1/2W :FPRD
C295 2.2 100V
R293 27k
C291 22 50V
C293 0.022 100V :PT
R291 12k 1/4W
T299
C294 2.2 160V
R290 390 :FPRD
AF OUT L
AF OUT R
IC303 NJM78M93FD 9V REG
TP93
OUT
IN
E
C330 220 16V
C364 470 25V
R362 56 2W :RS
R298 1.0k
RV299 10k B
R296 10k 1/4W
R297 100 :FPRD
R294 1.2k 1/4W
R295 10k
C296 4.7 50V
C299 4.7 50V
R299 1.2k 1/4W
C298 1 50V
IC203 MB3110A VOL CONTROLLER
IC301 CXA1013S Y CHROMA JUNGLE
TOT ADJ
FH ADJ
H IN
V IN
C IN
BIAS 2
N.C
Y IN
SHP
PIC
BRT
COL
HUE
B.P.H.
VCC 2
D.C.
VIDEO BLK
HALF BLK
B.G. OUT
BLK MUTE
N.C
R OUT
G OUT
B OUT
GND 2 (R&B)
GND 1 (MAIN)
FSC
VCC
SYS OUT
BIAS 1
TEST
X TAL
N.C
HD ⊖
HD ⊕
H.P
SAW
LAG-LEAD
ZNR
H. V VIDEO BLK
N.C
HOLD DOWN
FV ADJ
V HOLD
VRC
VD
VFB
C BLK OUT
R301 120k :RN ±1% R313 15k 1/4W
R302 56k
R303 10k
C507 220p B
C508 0.047 F
R505 130k 1/4W :RN ±1%
FH
RV501 100k
C501 100 16V
R502 3.9k 3W :RS
R501 3.3k 3W :RS
R323 6.8k
C312 15p
X301
L301 15uH
C302 27p
R508 47k 1/4W
C509 0.047 F
C511 0.033 100V :PT
C510 0.0068 100V :PT
R507 5.6k
R509 27k 1/4W
C530 4.7 25V :ALB
C512 2.2 50V
C515 0.22 50V
R510 2.7k
C518 0.0047 B
R513 130k :RN ±1%
FV
RV502 100k BLK
R514 33k 1/4W :RN ±1%
R515 6.8k
C516 47 16V
C513 50V
C514 10 50V
R512 330
R517 1.0k 1/4W
R516 8.2k
C511 C573 4.7M 0.22 1/2W 100V :RC :PT
Q304 2SC2785 BRT ABL
R519 3.9k
R506 150 1/4W
R532 56k 1/4W
Q371 2SC2785 PIC BUFFER
R398 3.3k
R371 10k
Q398 2SC2785 VCC 1 SW
R397 27k
C398 220p B
R330 5.6k
R335 4.7k
Q302 2SC2785-F PIC ABL2
Q301 2SC2785-F PIC ABL1
Q305 2SA1175 PIC ABL4
Q303 2SC2785 PIC ABL3
Q354 2SA1175 SW
R361 10k
C318 0.001 B
R334 470
R329 100k
R350 47k
R353 10k
R352 820k
D350 1SS133 CLAMP
D351 1SS119 CLAMP
C354 22 50V
C317 22 16V :ALB
R333 10k
H. PULSE
H. DRIVE
PM501 PM-8
R379 3.3k 3W :RS
R378 3.3k 3W :RS
C531 22 50V
R380 1.5k :FPRD
R535 1.5k :FPRD
R364 JW
R383 1/4W
C316 0.47 50V :ALB
C360 10 50V
C532 10 16V :ALB
R381
R382 10k 1/2W :RC
C361 0.47 50V
R570 S60 1W FPMO
Q551 2SD1555 H OUT
T501 HOT
C550 0.47 50V
C571 0.0056 200V :PT
R573 10k 1/2W :FPRD
Q550 2SC2688-K H DRIVE
R574 0.47 1W :RS
L507 1uH
L506 0.7uH
C554 470p 2kV B
C552 560p 2kV B
C555 0.01 630V :PT
C559 0.1 200V :PT
R572 3.3k
TP84
H. FREQ
C551 470p B
C553 330p 500V B
S8501
L510 HLC
C561 250V
D513 ERC26-15S H OUT DAMPER
L511 3.3mH
C564 200V :MPP
C565 0.043 400V :PP
C563 0.0075 1.4kV
C566 4.7 50V :ALT
D514 ERD28-08S PIN DAMPER
C567 0.001 500V B
L509 PMC
L508 4.7mH :LF-BL
C560 0.68 200V :MPP
R579 680 :FPRD
C562 470p 500V B
R580 180 1W :RS
R581 470 1/4W :FPRD
C568 0.047 100V :PT
D519 RGP01-17 H PROTECT
D515 GP08D H CENT1
R582 100 1W :RS
R577 120 2W :RS
A-13
PM-501
ABL DET2
ABL DET1
BLK OUT
13SV IN
BLK ADJ
BLK DETOUT
DET GND
ABL
FILTER
HD DETOUT
BLK REF
5.6V
HD REF
HV DIVIDED IN
24V
REF GND
A-6 (W)
A-17 (R)
SP902
SP901
See Page 12
See Page 12
CUATION
When replacing IC601, be sure to check the test point voltage value (TP91). Refer to the Safety Adjustment Section.
When replacing F8T (T504), be
voltage value. Refer to the Safe



WAVEFORMS OF A BOARD

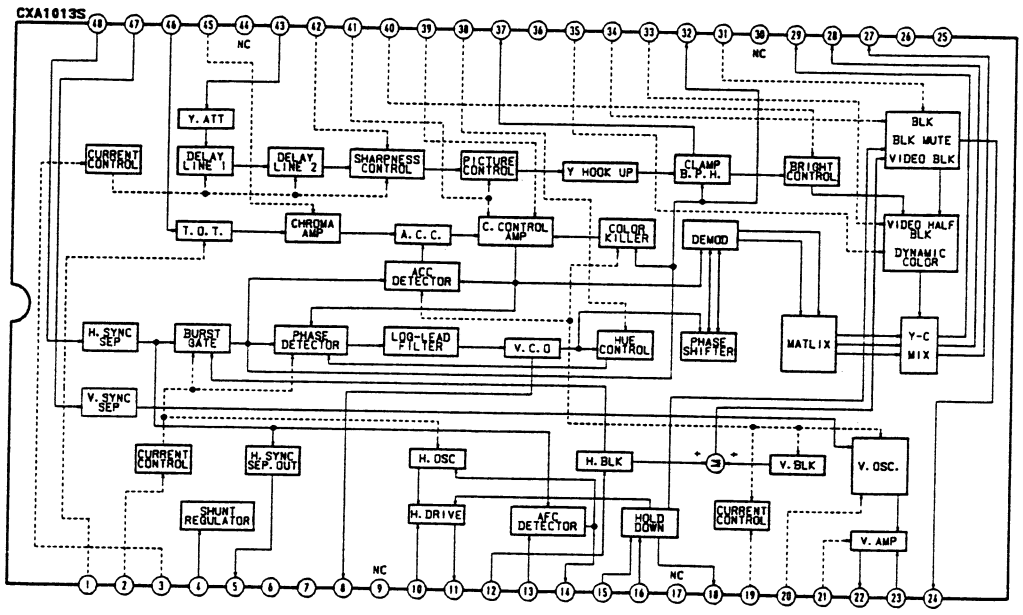
① 2Vp-p (H)	② 2Vp-p (H)	③ 2Vp-p (H)	④ 2Vp-p (H)	⑤ 1.5Vp-p (H)
⑥ 2Vp-p (H)	⑦ 4Vp-p (H)	⑧ 4Vp-p (H)	⑨ 4Vp-p (H)	⑩ 2Vp-p (H)
⑪ 1.9Vp-p (V)	⑫ 1.8Vp-p (V)	⑬ 2Vp-p (V)	⑭ 1.4Vp-p (H)	⑮ 4Vp-p (H)
⑯ 4.6Vp-p (H)	⑰ 0.4Vp-p (3.58MHz)	⑱ 4Vp-p (H)	⑲ 1.5Vp-p (V)	⑳ 34Vp-p (V)
㉑ 4.6Vp-p (H)	㉒ 140Vp-p (H)	㉓ 14Vp-p (H)	㉔ 1000Vp-p (H)	㉕ 5.6Vp-p (V)
㉖ 96Vp-p (H)	㉗ 8Vp-p (V)	㉘ 3.5Vp-p (H)	㉙ 4Vp-p (V)	㉚ 2.4Vp-p (4MHz)
㉛ 8Vp-p (H)	㉜ 0.7Vp-p (1KHz)			

WAVEFORMS OF C BOARD

㉝ 55Vp-p (H)	㉞ 52Vp-p (H)	㉟ 48Vp-p (H)	㊱ 20Vp-p (H)

A BOARD

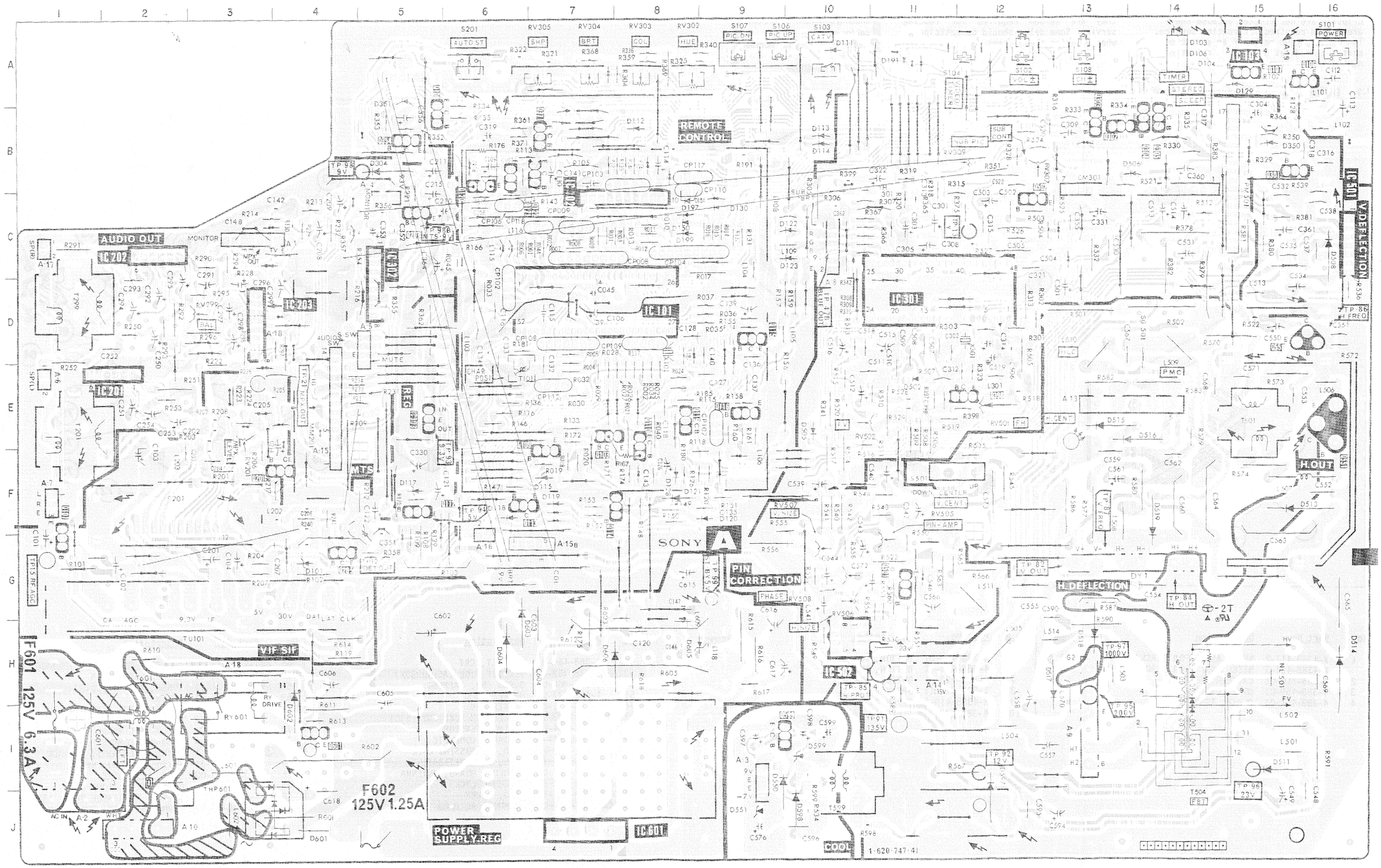
IC301 BLOCK DIAGRAM

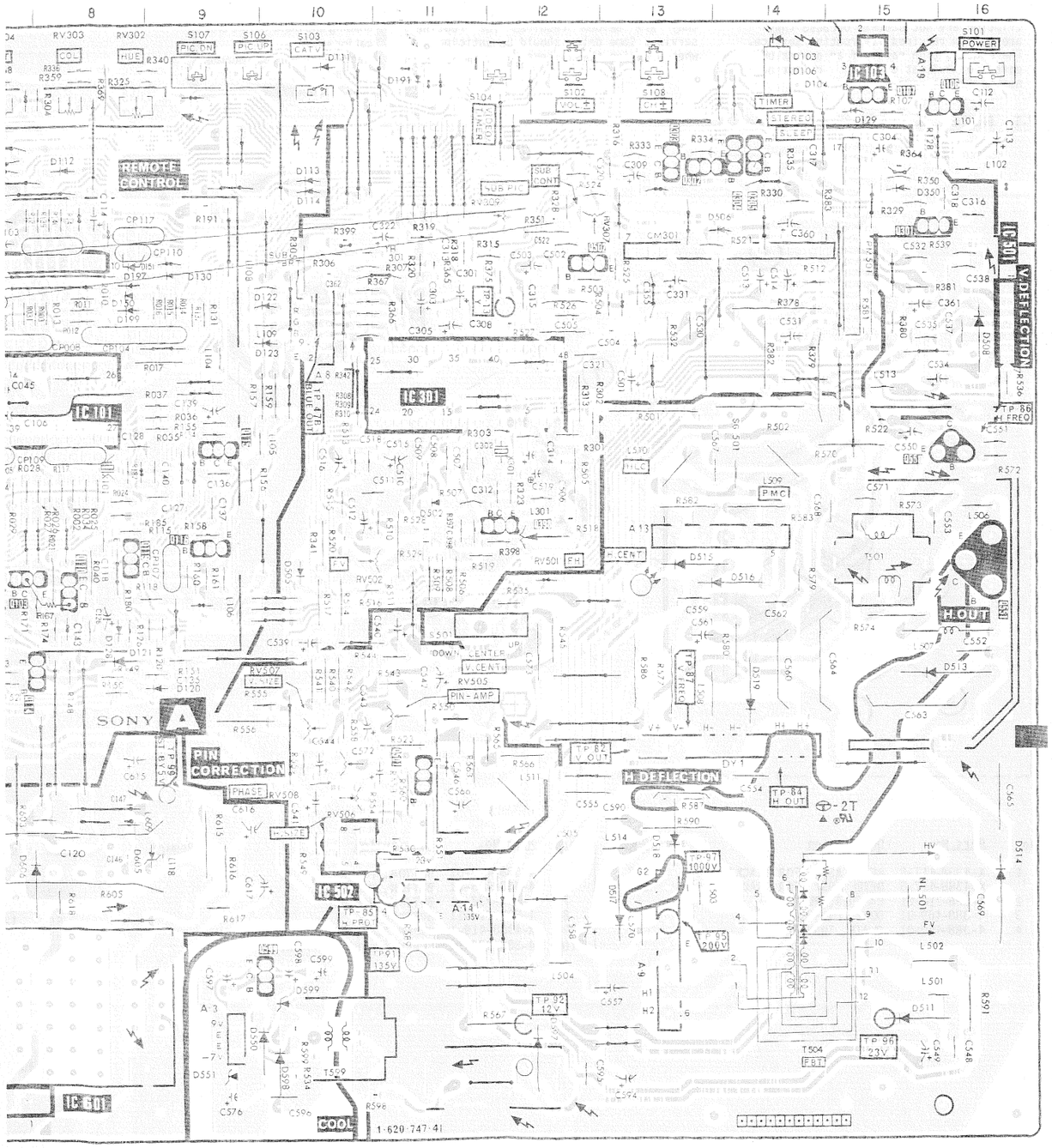


A (TUNER, VIF, SIF, PLL, CONTROLLER, MEMORY, AF AMP, VIDEO SW, COMB FILTER, Y.CROMA, JUNGLE, H.OUT, V.OUT, POWER SUPPLY, CUSTOMER CONTROL)

– Conductor Side –

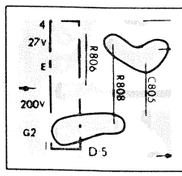
– A Board –





A BOARD

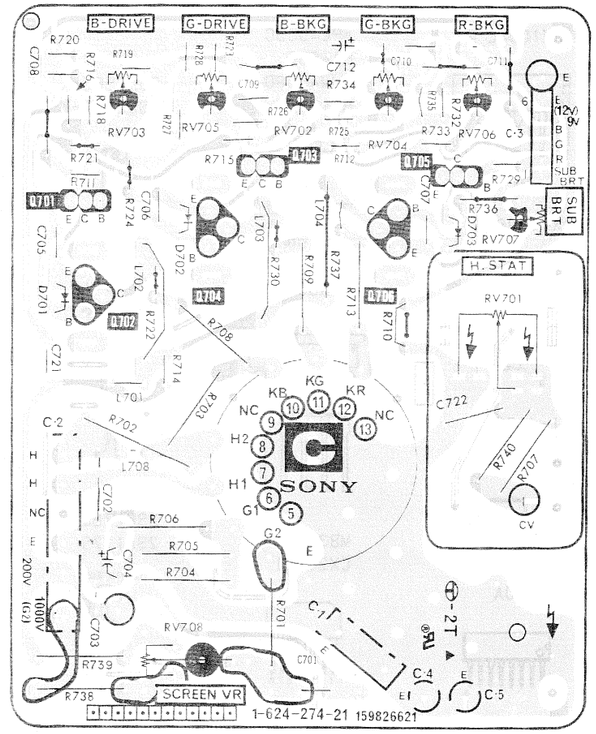
DIODE		TRANSISTOR	
D101	G-4	Q101	F-1
D103	A-14	Q103	F-7
D104	A-14	Q106	A-16
D106	A-14	Q107	A-15
D111	A-10	Q109	E-6
D112	B-8	Q110	E-8
D113	B-10	Q112	F-6
D114	B-10	Q113	F-6
D115	F-7	Q114	F-7
D117	F-5	Q115	D-9
D118	F-6	Q116	E-9
D119	F-7	Q119	E-8
D120	F-9	Q120	C-6
D121	F-8	Q121	C-6
D122	C-10	Q122	C-7
D123	C-10	Q203	C-5
D128	F-8	Q205	G-4
D129	A-15	Q301	B-15
D191	A-11	Q302	B-13
D304	B-5	Q304	B-14
D350	B-15	Q305	B-14
D351	A-5	Q354	B-5
D505	E-10	Q371	B-7
D506	B-13	Q398	E-12
D508	C-16	Q501	G-11
D511	I-15	Q502	C-12
D513	F-16	Q550	D-15
D514	H-16	Q551	F-16
D515	E-13	Q601	I-4
D516	E-14		
D517	H-13	RV	
D518	H-13		
D519	F-14	RV201	F-3
D597	I-12	RV299	D-3
D601	J-4	RV302	A-8
D602	I-4	RV303	A-8
D603	H-6	RV304	A-7
D604	H-6	RV305	A-7
D605	H-8	RV307	B-12
D606	H-7	RV501	E-12
IC		RV502	E-11
		RV505	F-11
IC101	D-8	RV506	G-10
IC102	C-7	RV507	F-9
IC103	A-15	RV508	G-10
IC201	E-2		
IC202	C-2		
IC203	D-3		
IC301	D-11		
IC303	E-5		
IC501	C-16		
IC502	H-10		
IC601	J-8		



NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

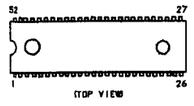
C (R,G,B OUT)

– C Board –

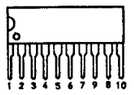


6-3. SEMICONDUCTORS

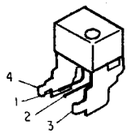
M50439-519SP



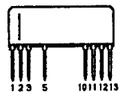
CXK1004L



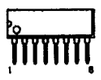
BX-1398



SI-4102

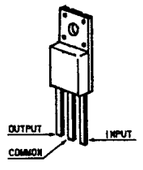


MB3110A

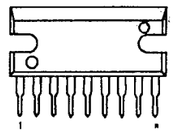


CXA1013S

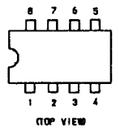
NJM78M93FD



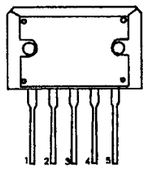
μPC1378H-P



μPC4558C
BA4558
NJM4558D
HA17558



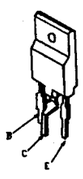
STR3035



MB3110A
CX20061

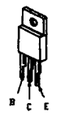
2SK105A-30

2SD1555-LB-SI



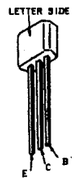
2SD789
2SD788

2SD1585-K
2SC3851-Y



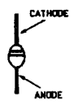
2SC2611
2SC2688

2SC2785
2SA1175



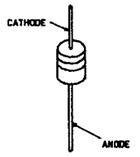
DTC144ES
2SC1740SS
2SC2458
2SC2603
2SA1048
2SA1115

GP08DPKG23
μ05E
μ05G
V19E
V19G

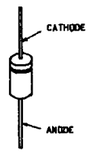


2SC1740SR
2SA933S-Q
2SA933S-R
2SC2551

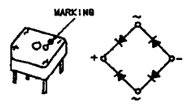
RD10E8-B2
RD33ES-B2
1SS133
1SS148
1SS119
RD4.3ES-B1
RD5.6ES-B2
RD5.1ES-B2



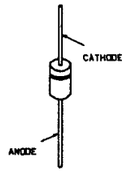
ERC06-15C
ERD28-08S
1S1555
EL1Z
10E2
RGP01-17PKG23
ES1F



S3WB60Z



ERB43-08
ERB43-04



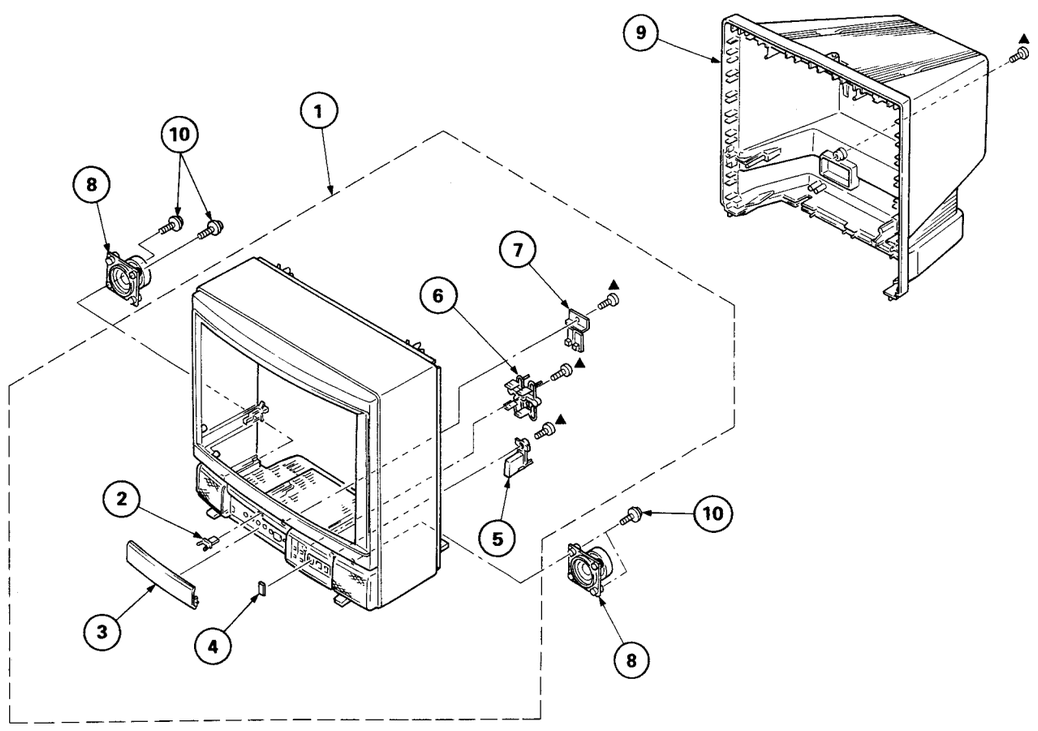
SECTION 7
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

7-1. BEZEL ▲ ; TA, BV4x16 7-685-663-79



No.	Part No.	Description	Remark
1	X-4388-417-2	BEZEL ASSY (FOR BLACK)	2-7
	X-4388-417-3	BEZEL ASSY (FOR TRAD OAK)	2-7
2	4-386-710-01	CATCHER, PUSH	
3	4-388-469-01	DOOR, CONTROL	
4	4-388-459-01	PLATE, TRANSPARENT	
5	4-388-460-01	BUTTON, POWER	
6	4-388-465-01	BUTTON, MULTI	
7	4-341-738-01	BUTTON, PICTURE	
8	1-503-918-11	SPEAKER	
9	X-4388-419-1	COVER ASSY, REAR	
10	4-388-477-01	SCREW (3x16), TAPPING	

7-2. PIC

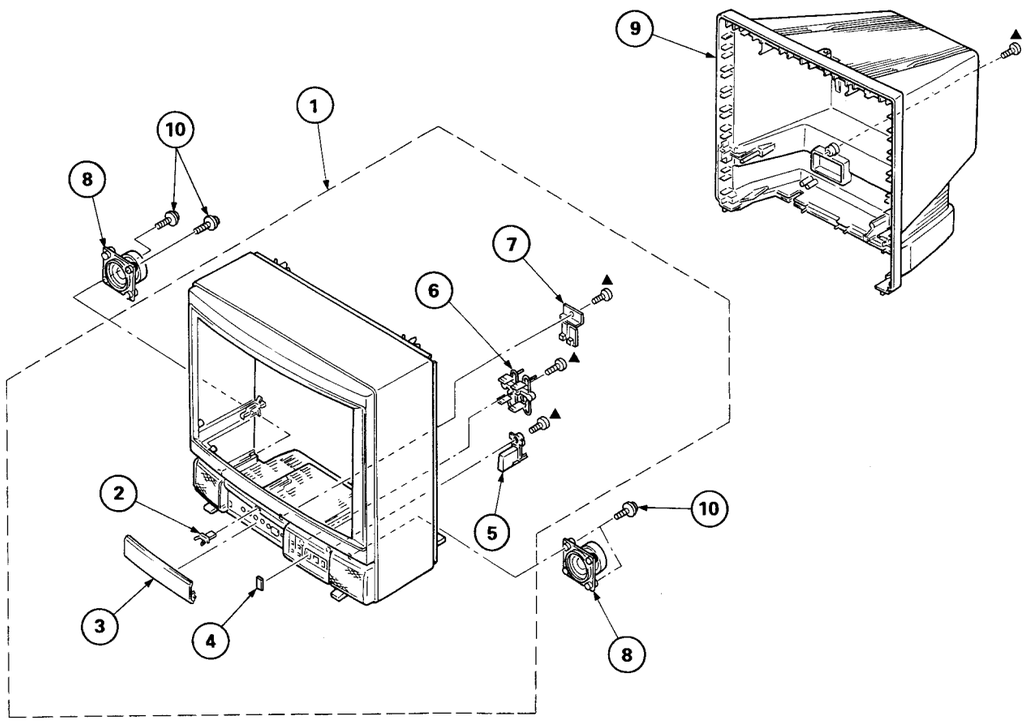
No.	Par
51	4-3
53	⚠.8-7
54	4-3
55	1-4
56	3-7
57	⚠.1-4
58	*4-3
59	*A-1
60	*4-3
61	⚠.1-4
62	4-3
63	⚠.1-5
64	⚠.1-5
65	⚠.4-3

SECTION 7
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

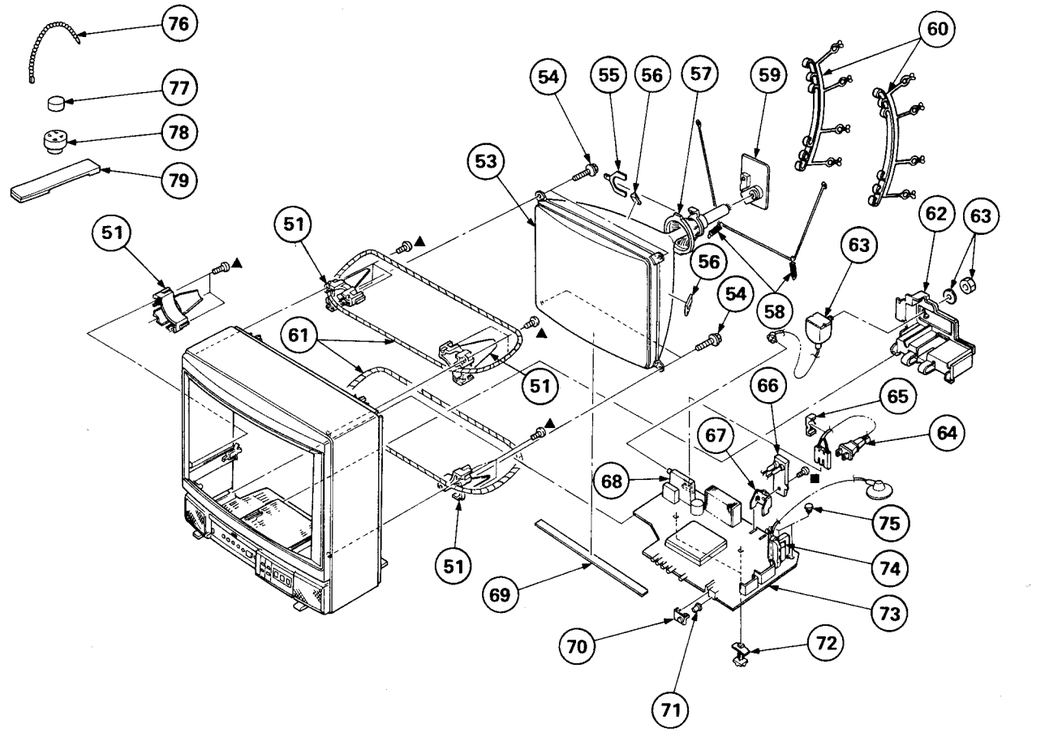
7-1. BEZEL ▲ ; TA, BV4x16 7-685-663-79



No.	Part No.	Description	Remark
1	X-4388-417-2	BEZEL ASSY (FOR BLACK)	2-7
	X-4388-417-3	BEZEL ASSY (FOR TRAD OAK)	2-7
2	4-386-710-01	CATCHER, PUSH	
3	4-388-469-01	DOOR, CONTROL	
4	4-388-459-01	PLATE, TRANSPARENT	
5	4-388-460-01	BUTTON, POWER	
6	4-388-465-01	BUTTON, MULTI	
7	4-341-738-01	BUTTON, PICTURE	
8	1-503-918-11	SPEAKER	
9	X-4388-419-1	COVER ASSY, REAR	
10	4-388-477-01	SCREW (3x16), TAPPING	

7-2. PICTURE TUBE ■ ; TA, BV3x8 7-685-646-79
▲ ; TA, BV4x16 7-685-663-79

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.



No.	Part No.	Description	Remark
51	4-388-464-01	BRACKET, CRT	
53	⚠8-738-752-05	PICTURE TUBE (A51JUH50X)	
54	4-365-808-00	SCREW (5), TAPPING	
55	1-452-277-00	MAGNET, BMC	
56	3-703-961-01	SPACER, DY	
57	⚠1-451-268-11	DEFLECTION YOKE (SY-153C)	
58	*4-375-394-01	SPRING, TENSION	
59	*A-1330-824-A	C BOARD, COMPLETE	
60	*4-341-778-01	BAND, DEGAUSSING COIL	
61	⚠1-426-358-11	COIL, DEMAGNETIZATION	
62	4-388-467-01	TERMINAL BOARD, ANTENNA	
63	⚠1-536-678-21	ANTENNA BLOCK	
64	⚠1-559-396-11	CORD, POWER	
65	⚠4-334-223-02	GROMMET, AC CORD	
66	⚠1-238-043-11	RESISTOR ASSY, HIGH-VOLTAGE	
67	*4-341-736-01	BRACKET, FOCUS VR	
68	⚠1-463-771-11	TUNER, ET (BTP-201A)	
69	4-385-725-01	CLOTH	
70	*4-381-686-01	BRACKET (B), BAR, OPTICAL	
71	*4-374-987-01	GUIDE, LIGHT	
72	*4-376-053-01	ANCHOR, PC BOARD	
73	*A-1296-409-A	A BOARD, COMPLETE	
74	⚠1-439-415-11	TRANSFORMER ASSY, FLYBACK	
75	3-531-576-31	RIVET (DIA. 3), NYLON	
76	4-308-870-00	CLIP, LEAD WIRE	
77	1-452-032-00	MAGNET,DISK; 10MM ø	
78	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ø	
79	X-4308-815-0	PERMALLOY ASSY, CONVERGENCE	

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SECTION 8
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

- The components identified by ✖ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

Ref.No	Part No.	Description				Remark
	*A-1296-409-A	A BOARD, COMPLETE				
		**********				
	*4-341-736-01	BRACKET, FOCUS VR				
		CONNECTOR				
A2	*1-506-348-XX	3P PLUG (L)				
A6	*1-566-054-11	PIN, CONNECTOR 2P				
A7	*1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P				
A8	*1-566-058-11	PIN, CONNECTOR 6P				
A9	*1-508-768-00	6P PLUG				
A10	*1-508-765-00	3P PLUG (M)				
A13	*1-508-767-00	5P PLUG				
A14	*1-508-766-00	4P PLUG (M)				
A15B	*1-560-125-00	PLUG, CONNECTOR (2.5MM) 5P				
A16	*1-560-290-00	PLUG, CONNECTOR (2.5MM PITCH)				
A17	*1-566-054-11	PIN, CONNECTOR 2P				
DY1	*1-564-038-00	CONNECTOR PLUG, DY (MINI) 6P				
		CAPACITOR				
C101	1-123-356-00	ELECT	10MF	20%	16V	
C102	1-124-908-11	ELECT	22MF	20%	50V	
C103	1-124-556-11	ELECT	2200MF	20%	16V	
C104	1-126-101-11	ELECT	100MF	20%	16V	
C106	1-119-160-00	ELECT	470MF		10V	
C107	1-101-361-00	CERAMIC	150PF	5%	50V	
C108	1-101-361-00	CERAMIC	150PF	5%	50V	
C109	1-124-927-11	ELECT	4.7MF	20%	50V	
C110	1-124-927-11	ELECT	4.7MF	20%	50V	
C112	1-126-101-11	ELECT	100MF	20%	16V	
C113	1-126-101-11	ELECT	100MF	20%	16V	
C114	1-123-356-00	ELECT	10MF	20%	16V	
C115	1-162-205-31	CERAMIC	18PF	5%	50V	
C116	1-106-367-00	MYLAR	0.01MF	10%	100V	
C118	1-106-367-00	MYLAR	0.01MF	10%	100V	
C120	1-106-383-00	MYLAR	0.047MF	10%	100V	
C121	1-124-477-11	ELECT	47MF	20%	16V	
C122	1-124-963-11	ELECT	33MF	20%	16V	
C126	1-124-902-00	ELECT	0.47MF	20%	50V	
C127	1-102-963-00	CERAMIC	33PF	5%	50V	
C128	1-102-965-00	CERAMIC	39PF	5%	50V	
C132	1-102-965-00	CERAMIC	39PF	5%	50V	
C133	1-102-964-00	CERAMIC	36PF	5%	50V	
C135	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C136	1-124-499-11	ELECT	1MF	20%	50V	
C137	1-124-499-11	ELECT	1MF	20%	50V	
C139	1-124-477-11	ELECT	47MF	20%	16V	
C140	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C141	1-124-925-11	ELECT	2.2MF	20%	50V	
C143	1-106-367-00	MYLAR	0.01MF	10%	100V	
C201	1-126-101-11	ELECT	100MF	20%	16V	
C204	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C208	1-123-875-11	ELECT	10MF	20%	50V	
C209	1-123-875-11	ELECT	10MF	20%	50V	
C211	1-124-477-11	ELECT	47MF	20%	16V	
C214	1-123-875-11	ELECT	10MF	20%	50V	
C215	1-123-875-11	ELECT	10MF	20%	50V	
C250	1-124-908-11	ELECT	22MF	20%	50V	
C251	1-124-667-11	ELECT	10MF	20%	100V	
C252	1-106-375-12	MYLAR	0.022MF	10%	100V	
C253	1-124-799-11	ELECT	2.2MF	20%	160V	
C254	1-124-925-11	ELECT	2.2MF	20%	100V	
C291	1-124-908-11	ELECT	22MF	20%	50V	
C292	1-124-667-11	ELECT	10MF	20%	100V	
C293	1-106-375-12	MYLAR	0.022MF	10%	100V	
C294	1-124-799-11	ELECT	2.2MF	20%	160V	
C295	1-124-925-11	ELECT	2.2MF	20%	100V	
C296	1-124-927-11	ELECT	4.7MF	20%	50V	
C298	1-124-499-11	ELECT	1MF	20%	50V	
C299	1-124-927-11	ELECT	4.7MF	20%	50V	
C301	1-124-902-00	ELECT	0.47MF	20%	50V	
C302	1-102-961-00	CERAMIC	27PF	5%	50V	
C303	1-126-101-11	ELECT	100MF	20%	16V	
C305	1-124-902-00	ELECT	0.47MF	20%	50V	
C309	1-124-499-11	ELECT	1MF	20%	50V	
C312	1-102-951-00	CERAMIC	15PF	5%	50V	
C315	1-124-284-00	ELECT	10MF	20%	16V	
C316	1-124-270-11	ELECT	0.47MF	20%	50V	
C317	1-124-282-00	ELECT	22MF	20%	16V	
C318	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C321	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C322	1-123-875-11	ELECT	10MF	20%	50V	
C330	1-124-120-11	ELECT	220MF	20%	16V	
C331	1-126-101-11	ELECT	100MF	20%	16V	
C355	1-102-121-00	CERAMIC	0.0022MF	10%	50V	
C356	1-124-908-11	ELECT	22MF	20%	50V	
C360	1-123-875-11	ELECT	10MF	20%	50V	
C361	1-124-902-00	ELECT	0.47MF	20%	50V	
C364	1-124-480-11	ELECT	470MF	20%	25V	
C398	1-102-110-00	CERAMIC	220PF	10%	50V	
C501	1-126-101-11	ELECT	100MF	20%	16V	
C502	1-106-363-00	MYLAR	0.0068MF	10%	100V	
C503	1-124-902-00	ELECT	0.47MF	20%	50V	
C505	1-106-359-00	MYLAR	0.0047MF	10%	100V	
C507	1-102-110-00	CERAMIC	220PF	10%	50V	
C508	1-101-006-00	CERAMIC	0.047MF		50V	
C509	1-101-006-00	CERAMIC	0.047MF		50V	
C510	1-106-363-00	MYLAR	0.0068MF	10%	100V	
C511	1-106-379-12	MYLAR	0.033MF	10%	100V	
C512	1-124-925-11	ELECT	2.2MF	20%	50V	
C513	1-124-499-11	ELECT	1MF	20%	50V	
C514	1-123-875-11	ELECT	10MF	20%	50V	
C515	1-124-464-11	ELECT	0.22MF	20%	50V	
C516	1-124-477-11	ELECT	47MF	20%	16V	
C518	1-102-125-00	CERAMIC	0.0047MF	10%	50V	
C520	1-124-274-00	ELECT	4.7MF	20%	50V	

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The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No	Part No.	Description			Remark
C522	1-102-822-00	CERAMIC	390PF	5%	50V
C530	1-124-277-11	ELECT	4.7MF	20%	25V
C531	1-124-908-11	ELECT	22MF	20%	50V
C532	1-124-284-00	ELECT	10MF	20%	16V
C534	1-124-122-11	ELECT	100MF	20%	35V
C535	1-102-030-00	CERAMIC	330PF	10%	500V
C537	1-106-363-00	MYLAR	0.0068MF	10%	100V
C538	1-106-375-12	MYLAR	0.022MF	10%	100V
C539	1-124-927-11	ELECT	4.7MF	20%	50V
C540	1-124-925-11	ELECT	2.2MF	20%	50V
C541	1-124-910-11	ELECT	47MF	20%	50V
C542	1-123-587-00	ELECT	560MF	10%	25V
C543	1-123-875-11	ELECT	10MF	20%	50V
C544	1-124-925-11	ELECT	2.2MF	20%	50V
C546	1-106-343-00	MYLAR	0.001MF	10%	100V
C548	1-102-212-00	CERAMIC	820PF	10%	500V
C549	1-124-479-11	ELECT	330MF	20%	25V
C550	1-124-902-00	ELECT	0.47MF	20%	50V
C551	1-102-114-00	CERAMIC	470PF	10%	50V
C552 ⚠	1-162-135-51	CERAMIC	560PF	10%	2KV
C553	1-102-030-00	CERAMIC	330PF	10%	500V
C554 ⚠	1-162-134-51	CERAMIC	470PF	10%	2KV
C555 ⚠	1-129-714-51	FILM	0.01MF	10%	630V
C557	1-124-494-00	ELECT	33MF		160V
C558	1-124-046-00	ELECT	10MF	20%	160V
C559	1-106-391-12	MYLAR	0.1MF		200V
C560	1-136-109-00	FILM	0.68MF	5%	200V
	*4-341-751-01	PAWL; C560			
C561	1-124-634-11	ELECT	1MF	20%	250V
C562 ⚠	1-102-228-91	CERAMIC	470PF	10%	500V
C563 ⚠	1-136-309-11	FILM	0.0075MF	3%	1.4KV
	*4-341-751-01	PAWL; C563			
C564 ⚠	1-136-111-11	FILM	1MF	5%	200V
	*4-341-751-01	PAWL; C564			
C565 ⚠	1-136-312-51	FILM	0.043MF	5%	400V
	*4-341-751-01	PAWL; C565			
C566	1-124-045-00	ELECT	4.7MF	20%	50V
C567 ⚠	1-162-318-51	CERAMIC	0.001MF	10%	500V
C568	1-106-383-00	MYLAR	0.047MF	10%	100V
C569	1-106-375-12	MYLAR	0.022MF	99%	200V
C570	1-162-114-00	CERAMIC	0.0047MF		2KV
C571	1-108-418-12	MYLAR	0.0056MF	99%	200V
C572	1-123-875-11	ELECT	10MF	20%	50V
C573	1-106-228-00	MYLAR	0.22MF	10%	100V
C590	1-108-422-12	MYLAR	0.012MF	99%	200V
C592	1-124-556-11	ELECT	2200MF	20%	16V
C593	1-124-556-11	ELECT	2200MF	20%	16V
C594	1-124-557-11	ELECT	1000MF	20%	25V
C595	1-102-212-00	CERAMIC	820PF	10%	500V
C601 ⚠	1-108-745-52	MYLAR	0.22MF	20%	125V
C602 ⚠	1-125-457-11	ELECT(BLOCK)	560MF	20%	200V
C603	1-161-830-00	CERAMIC	0.0047MF	99%	500V
C604	1-161-830-00	CERAMIC	0.0047MF	99%	500V
C605	1-123-948-00	ELECT	22MF	20%	250V
C606	1-124-444-00	ELECT	220MF	20%	10V
C615	1-124-046-00	ELECT	10MF	20%	160V
C616	1-124-046-00	ELECT	10MF	20%	160V
C617	1-124-046-00	ELECT	10MF	20%	160V

FILTER BLOCK

CM301	1-464-720-11	FILTER BLOCK, COM (CFB-1)

DIODE

D101	8-719-110-78	DIODE RD33ES-B2
D103	1-807-643-11	LED UNIT (LEDU-1)
D104	1-807-643-11	LED UNIT (LEDU-1)
D106	1-807-643-11	LED UNIT (LEDU-1)
D111	8-719-911-19	DIODE 1SS119
D112	8-719-911-19	DIODE 1SS119
D113	8-719-911-19	DIODE 1SS119
D114	8-719-911-19	DIODE 1SS119
D115	8-719-109-74	DIODE RD4.3ES-B1
D117	8-719-109-89	DIODE RD5.6ES-B2
D118	8-719-911-19	DIODE 1SS119
D119	8-719-911-19	DIODE 1SS119
D120	8-719-911-19	DIODE 1SS119
D121	8-719-815-55	DIODE 1S1555
D122	8-719-911-19	DIODE 1SS119
D123	8-719-911-19	DIODE 1SS119
D128	8-719-911-19	DIODE 1SS119
D129	8-719-911-19	DIODE 1SS119
D151	8-719-911-19	DIODE 1SS119
D199	8-719-911-19	DIODE 1SS119
D304	8-719-302-43	DIODE EL1Z
D350	8-719-911-19	DIODE 1SS119
D351	8-719-911-19	DIODE 1SS119
D505	8-719-911-19	DIODE 1SS119
D506	8-719-911-19	DIODE 1SS119
D508	8-719-911-55	DIODE U05G
D511	8-719-918-77	DIODE V19G
D513	8-719-945-80	DIODE ERC06-15S
D514	8-719-928-08	DIODE ERD28-08S
D515	8-719-911-55	DIODE U05G
D516	8-719-911-55	DIODE U05G
D517	8-719-300-76	DIODE RH-1A
D518	8-719-300-65	DIODE ES1F
D519	8-719-300-65	DIODE ES1F
D597	8-719-921-53	DIODE RGP15G
D601 ⚠	8-719-503-06	DIODE S3WB60Z
D602	8-719-911-55	DIODE U05G
D603	8-719-911-55	DIODE U05G
D604	8-719-911-55	DIODE U05G
D605	8-719-109-85	DIODE RD5.1ES-B2
D606	8-719-911-55	DIODE U05G

FUSE

F601 ⚠	1-532-509-11	FUSE, GLASS TUBE 6.3A/125V
	1-533-190-11	CLIP, FUSE; F601
F602 ⚠	1-532-741-11	FUSE, GLASS TUBE 1.25A/125V
	*1-533-189-11	HOLDER, FUSE; F602

IC

IC101	8-759-605-39	IC M50439-519SP
IC102	8-759-803-24	IC CXK1004L
IC103	8-741-139-80	IC BX1398
IC201 ⚠	8-749-900-15	IC SI-4102
IC202 ⚠	8-749-900-15	IC SI-4102
IC203	8-759-940-88	IC MB3110A
IC301	8-752-030-69	IC CXA1013S
IC303	8-759-710-04	IC NJM78M93FD
IC501	8-759-105-82	IC UPC1378H-P
	3-701-833-01	HEAD, WASHER, TAPPING SCREW; IC501
IC502	8-759-145-58	IC UPC4558C
IC601 ⚠	8-749-930-35	IC STR3035
	4-302-428-00	HEAD, WASHER, TAPPING SCREW; IC601
	4-369-267-01	SPACER, MICA; IC601
MM201	8-749-900-80	IC BX1458

IF BLOCK

IF201	1-464-755-11	IF BLOCK (IFE-450)

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No	Part No.	Description	Remark
		COIL	
L101	1-408-421-00	INDUCTOR 100UH	
L102	1-408-421-00	INDUCTOR 100UH	
L103	1-408-421-00	INDUCTOR 100UH	
L104	1-408-404-00	INDUCTOR 3.9UH	
L105	1-408-404-00	INDUCTOR 3.9UH	
L106	1-408-404-00	INDUCTOR 3.9UH	
L108	1-410-472-41	INDUCTOR 15UH	
L109	1-410-472-41	INDUCTOR 15UH	
L203	1-408-408-00	INDUCTOR 8.2UH	
L301	1-410-421-11	INDUCTOR 15UH	
L501	1-410-666-31	INDUCTOR 18UH	
L502	1-408-938-00	INDUCTOR 22UH	
L503	1-410-669-31	INDUCTOR 33UH	
L504	1-459-313-00	COIL WITH CORE (HWC)	
L505	1-459-104-00	COIL, DUST CORE	
L506	1-407-365-00	COIL, CHOKE	
L507	1-408-349-00	COIL, CHOKE	
L508	1-408-239-00	INDUCTOR 4.7MMH	
L509	⚠1-459-390-11	COIL (WITH CORE)	
L510	⚠1-459-626-12	HLC	
	*4-341-751-01	PAWL; L510	
L511	1-459-075-00	COIL, DYNAMIC CONVERSION CHOKE	
L513	1-410-665-31	INDUCTOR 15UH	
L514	1-459-407-00	COIL, FERRITE CHOKE	
L601	⚠1-408-225-21	INDUCTOR 3.3UH	
L602	⚠1-408-225-21	INDUCTOR 3.3UH	
L609	1-410-459-11	INDUCTOR 1.2UH	
		NEON LAMP	
NL501	1-519-108-XX	LAMP, NEON	
		MODULE	
PM501	1-235-962-11	PROTECTOR MODULE (PM-8)	
		TRANSISTOR	
Q101	8-729-178-54	TRANSISTOR 2SC2785	
Q103	8-729-178-54	TRANSISTOR 2SC2785	
Q106	8-729-117-54	TRANSISTOR 2SA1175	
Q107	8-729-117-54	TRANSISTOR 2SA1175	
Q108	8-729-178-54	TRANSISTOR 2SC2785	
Q109	8-729-117-54	TRANSISTOR 2SA1175	
Q110	8-729-178-54	TRANSISTOR 2SC2785	
Q112	8-729-378-91	TRANSISTOR 2SD789	
Q113	8-729-117-54	TRANSISTOR 2SA1175	
Q114	8-729-178-54	TRANSISTOR 2SC2785	
Q115	8-729-178-54	TRANSISTOR 2SC2785	
Q116	8-729-178-54	TRANSISTOR 2SC2785	
Q119	8-729-178-54	TRANSISTOR 2SC2785	
Q120	8-729-178-54	TRANSISTOR 2SC2785	
Q121	8-729-178-54	TRANSISTOR 2SC2785	
Q122	8-729-178-54	TRANSISTOR 2SC2785	
Q203	8-729-378-84	TRANSISTOR 2SD788	
Q205	8-729-178-54	TRANSISTOR 2SC2785	
Q301	8-729-178-54	TRANSISTOR 2SC2785	
Q302	8-729-178-54	TRANSISTOR 2SC2785	
Q303	8-729-178-54	TRANSISTOR 2SC2785	
Q304	8-729-178-54	TRANSISTOR 2SC2785	
Q305	8-729-117-54	TRANSISTOR 2SA1175	
Q354	8-729-117-54	TRANSISTOR 2SA1175	
Q371	8-729-178-54	TRANSISTOR 2SC2785	
Q398	8-729-178-54	TRANSISTOR 2SC2785	
Q501	8-729-107-26	TRANSISTOR 2SD1585-K	
Q502	8-729-117-54	TRANSISTOR 2SA1175	
Q550	8-729-168-82	TRANSISTOR 2SC2688	
Q551	8-729-203-80	TRANSISTOR 2SD1555-LB-S1	
Q601	8-729-255-12	TRANSISTOR 2SC2551	

Ref.No	Part No.	Description				Remark
		RESISTOR				
R001	1-249-421-11	CARBON	2.2K	5%	1/4W	
R002	1-249-414-11	CARBON	560	5%	1/4W	
R003	1-249-414-11	CARBON	560	5%	1/4W	
R004	1-249-414-11	CARBON	560	5%	1/4W	
R005	1-249-414-11	CARBON	560	5%	1/4W	
R006	1-249-414-11	CARBON	560	5%	1/4W	
R007	1-249-414-11	CARBON	560	5%	1/4W	
R008	1-249-414-11	CARBON	560	5%	1/4W	
R009	1-249-414-11	CARBON	560	5%	1/4W	
R010	1-249-414-11	CARBON	560	5%	1/4W	
R011	1-249-414-11	CARBON	560	5%	1/4W	
R012	1-249-414-11	CARBON	560	5%	1/4W	
R013	1-249-414-11	CARBON	560	5%	1/4W	
R014	1-249-421-11	CARBON	2.2K	5%	1/4W	
R015	1-249-421-11	CARBON	2.2K	5%	1/4W	
R016	1-249-421-11	CARBON	2.2K	5%	1/4W	
R017	1-247-717-11	CARBON	2.2K	5%	1/4W	
R018	1-249-416-11	CARBON	820	5%	1/4W	
R019	1-249-429-11	CARBON	10K	5%	1/4W	
R020	1-249-429-11	CARBON	10K	5%	1/4W	
R021	1-249-463-11	CARBON	27K	5%	1/4W	
R022	1-249-414-11	CARBON	560	5%	1/4W	
R024	1-249-421-11	CARBON	2.2K	5%	1/4W	
R025	1-249-421-11	CARBON	2.2K	5%	1/4W	
R026	1-249-421-11	CARBON	2.2K	5%	1/4W	
R027	1-249-421-11	CARBON	2.2K	5%	1/4W	
R028	1-249-423-11	CARBON	3.3K	5%	1/4W	
R029	1-249-414-11	CARBON	560	5%	1/4W	
R030	1-249-414-11	CARBON	560	5%	1/4W	
R031	1-249-414-11	CARBON	560	5%	1/4W	
R032	1-249-414-11	CARBON	560	5%	1/4W	
R034	1-249-426-11	CARBON	5.6K	5%	1/4W	
R035	1-249-417-11	CARBON	1K	5%	1/4W	
R036	1-249-416-11	CARBON	820	5%	1/4W	
R037	1-249-416-11	CARBON	820	5%	1/4W	
R040	1-249-460-11	CARBON	15K	5%	1/4W	
R044	1-249-414-11	CARBON	560	5%	1/4W	
R101	1-249-426-11	CARBON	5.6K	5%	1/4W	
R102	1-247-713-11	CARBON	1K	5%	1/4W	
R103	1-215-923-00	METAL OXIDE	10K	5%	3W	F
R105	1-249-465-11	CARBON	47K	5%	1/4W	
R107	1-249-437-11	CARBON	47K	5%	1/4W	
R108	1-247-721-11	CARBON	4.7K	5%	1/4W	
R109	1-249-425-11	CARBON	4.7K	5%	1/4W	
R113	1-249-417-11	CARBON	1K	5%	1/4W	
R115	1-249-421-11	CARBON	2.2K	5%	1/4W	
R116	1-249-421-11	CARBON	2.2K	5%	1/4W	
R117	1-249-421-11	CARBON	2.2K	5%	1/4W	
R118	1-249-433-11	CARBON	22K	5%	1/4W	
R119	1-247-713-11	CARBON	1K	5%	1/4W	
R120	1-249-437-11	CARBON	47K	5%	1/4W	
R121	1-249-434-11	CARBON	27K	5%	1/4W	
R124	1-249-417-11	CARBON	1K	5%	1/4W	
R125	1-249-417-11	CARBON	1K	5%	1/4W	
R126	1-249-429-11	CARBON	10K	5%	1/4W	
R128	1-249-429-11	CARBON	10K	5%	1/4W	
R131	1-249-412-11	CARBON	390	5%	1/4W	
R132	1-249-412-11	CARBON	390	5%	1/4W	
R133	1-249-429-11	CARBON	10K	5%	1/4W	
R134	1-249-413-11	CARBON	470	5%	1/4W	

KV-20TS10
RM-758

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Replace only with part number specified.

Ref.No	Part No.	Description				Remark
R135	1-249-417-11	CARBON	1K	5%	1/4W	
R136	1-249-405-11	CARBON	100	5%	1/4W	
R139	1-249-417-11	CARBON	1K	5%	1/4W	
R140	1-249-417-11	CARBON	1K	5%	1/4W	
R141	1-249-417-11	CARBON	1K	5%	1/4W	
R142	1-249-429-11	CARBON	10K	5%	1/4W	
R143	1-249-429-11	CARBON	10K	5%	1/4W	
R146	1-249-417-11	CARBON	1K	5%	1/4W	
R147	1-249-416-11	CARBON	820	5%	1/4W	
R148	1-249-432-11	CARBON	18K	5%	1/4W	
R149	1-249-423-11	CARBON	3.3K	5%	1/4W	
R150	1-249-437-11	CARBON	47K	5%	1/4W	
R151	1-249-429-11	CARBON	10K	5%	1/4W	
R152	1-249-433-11	CARBON	22K	5%	1/4W	
R153	1-249-428-11	CARBON	8.2K	5%	1/4W	
R154	1-247-895-00	CARBON	470K	5%	1/4W	
R155	1-249-439-11	CARBON	68K	5%	1/4W	
R156	1-249-424-11	CARBON	3.9K	5%	1/4W	
R157	1-247-704-11	CARBON	220	5%	1/4W	
R158	1-247-895-00	CARBON	470K	5%	1/4W	
R159	1-247-704-11	CARBON	220	5%	1/4W	
R160	1-249-439-11	CARBON	68K	5%	1/4W	
R161	1-249-424-11	CARBON	3.9K	5%	1/4W	
R166	1-249-429-11	CARBON	10K	5%	1/4W	
R167	1-215-493-00	CARBON	1M	5%	1/4W	
R170	1-249-415-11	CARBON	680	5%	1/4W	
R171	1-249-423-11	CARBON	3.3K	5%	1/4W	
R172	1-249-434-11	CARBON	27K	5%	1/4W	
R174	1-215-479-00	CARBON	270K	5%	1/4W	
R175	1-249-469-11	CARBON	100K	5%	1/4W	
R176	1-249-441-11	CARBON	100K	5%	1/4W	
R180	1-249-426-11	CARBON	5.6K	5%	1/4W	
R181	1-249-416-11	CARBON	820	5%	1/4W	
R182	1-249-415-11	CARBON	680	5%	1/4W	
R185	1-249-429-11	CARBON	10K	5%	1/4W	
R204	1-249-435-11	CARBON	33K	5%	1/4W	
R206	1-249-417-11	CARBON	1K	5%	1/4W	
R207	1-249-435-11	CARBON	33K	5%	1/4W	
R208	1-249-425-11	CARBON	4.7K	5%	1/4W	
R211	1-249-411-11	CARBON	330	5%	1/4W	
R213	1-249-432-11	CARBON	18K	5%	1/4W	
R214	1-249-432-11	CARBON	18K	5%	1/4W	
R217	1-249-417-11	CARBON	1K	5%	1/4W	
R221	1-249-413-11	CARBON	470	5%	1/4W	
R231	1-249-405-11	CARBON	100	5%	1/4W	
R232	1-249-411-11	CARBON	330	5%	1/4W	
R233	1-249-411-11	CARBON	330	5%	1/4W	
R234	1-249-411-11	CARBON	330	5%	1/4W	
R240	1-249-425-11	CARBON	4.7K	5%	1/4W	
R241	1-249-441-11	CARBON	100K	5%	1/4W	
R250	1-249-412-11	CARBON	390	5%	1/4W	F
R251 ⚠	1-246-987-11	CARBON	47	5%	1/8W	F
R252	1-249-459-11	CARBON	12K	5%	1/4W	
R253	1-249-434-11	CARBON	27K	5%	1/4W	
R290	1-249-412-11	CARBON	390	5%	1/4W	F
R291	1-249-459-11	CARBON	12K	5%	1/4W	
R292 ⚠	1-246-987-11	CARBON	47	5%	1/8W	F
R293	1-249-434-11	CARBON	27K	5%	1/4W	
R294	1-249-418-11	CARBON	1.2K	5%	1/4W	
R295	1-249-429-11	CARBON	10K	5%	1/4W	
R296	1-247-725-11	CARBON	10K	5%	1/4W	
R297	1-249-405-11	CARBON	100	5%	1/4W	F
R298	1-249-417-11	CARBON	1K	5%	1/4W	
R299	1-249-418-11	CARBON	1.2K	5%	1/4W	
R301	1-215-471-00	METAL	120K	1%	1/6W	

Ref.No	Part No.	Description				Remark
R302	1-249-438-11	CARBON	56K	5%	1/4W	
R303	1-249-429-11	CARBON	10K	5%	1/4W	
R304	1-215-479-00	CARBON	270K	5%	1/4W	
R305	1-249-468-11	CARBON	82K	5%	1/4W	
R306	1-249-437-11	CARBON	47K	5%	1/4W	
R307	1-249-429-11	CARBON	10K	5%	1/4W	
R308	1-249-411-11	CARBON	330	5%	1/4W	
R309	1-249-411-11	CARBON	330	5%	1/4W	
R310	1-249-411-11	CARBON	330	5%	1/4W	
R313	1-249-460-11	CARBON	15K	5%	1/4W	
R315	1-249-417-11	CARBON	1K	5%	1/4W	
R316	1-249-411-11	CARBON	330	5%	1/4W	
R318	1-249-417-11	CARBON	1K	5%	1/4W	
R319	1-249-417-11	CARBON	1K	5%	1/4W	
R320	1-249-417-11	CARBON	1K	5%	1/4W	
R323	1-249-427-11	CARBON	6.8K	5%	1/4W	
R328	1-249-414-11	CARBON	560	5%	1/4W	
R329	1-249-441-11	CARBON	100K	5%	1/4W	
R330	1-249-426-11	CARBON	5.6K	5%	1/4W	
R333	1-249-429-11	CARBON	10K	5%	1/4W	
R334	1-249-413-11	CARBON	470	5%	1/4W	
R335	1-249-425-11	CARBON	4.7K	5%	1/4W	
R336	1-249-425-11	CARBON	4.7K	5%	1/4W	
R340	1-249-430-11	CARBON	12K	5%	1/4W	
R341	1-247-717-11	CARBON	2.2K	5%	1/4W	
R342	1-249-421-11	CARBON	2.2K	5%	1/4W	
R350	1-249-437-11	CARBON	47K	5%	1/4W	
R352	1-215-491-00	CARBON	820K	5%	1/4W	
R353	1-249-429-11	CARBON	10K	5%	1/4W	
R358	1-249-405-11	CARBON	100	5%	1/4W	
R359	1-249-431-11	CARBON	15K	5%	1/4W	
R361	1-249-429-11	CARBON	10K	5%	1/4W	
R362	1-216-449-11	METAL OXIDE	56	5%	2W	F
R366	1-249-430-11	CARBON	12K	5%	1/4W	
R367	1-249-436-11	CARBON	39K	5%	1/4W	
R368	1-249-417-11	CARBON	1K	5%	1/4W	
R369	1-247-713-11	CARBON	1K	5%	1/4W	
R371	1-249-429-11	CARBON	10K	5%	1/4W	
R375	1-249-434-11	CARBON	27K	5%	1/4W	
R378	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R379	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R380	1-249-419-11	CARBON	1.5K	5%	1/4W	F
⋈R381 ⚠		CARBON			1/4W	
R382	1-202-830-00	SOLID	10K	10%	1/2W	
⋈R383 ⚠		CARBON			1/4W	
R397	1-249-434-11	CARBON	27K	5%	1/4W	
R398	1-249-423-11	CARBON	3.3K	5%	1/4W	
R501	1-215-920-11	METAL OXIDE	3.3K	5%	3W	F
R502	1-216-484-00	METAL OXIDE	3.9K	5%	3W	F
R503	1-249-408-11	CARBON	180	5%	1/4W	
R504	1-249-411-11	CARBON	330	5%	1/4W	
R505	1-214-780-00	METAL	130K	1%	1/4W	
R506	1-247-702-11	CARBON	150	5%	1/4W	
R507	1-249-426-11	CARBON	5.6K	5%	1/4W	
R508	1-249-465-11	CARBON	47K	5%	1/4W	
R509	1-249-463-11	CARBON	27K	5%	1/4W	
R510	1-249-422-11	CARBON	2.7K	5%	1/4W	
R511	1-202-727-00	SOLID	4.7M	10%	1/2W	
R512	1-249-411-11	CARBON	330	5%	1/4W	
R513	1-215-472-00	METAL	130K	1%	1/6W	
R514	1-214-765-00	METAL	33K	1%	1/4W	
R515	1-249-427-11	CARBON	6.8K	5%	1/4W	
R516	1-249-428-11	CARBON	8.2K	5%	1/4W	
R517	1-247-713-11	CARBON	1K	5%	1/4W	
R519	1-249-424-11	CARBON	3.9K	5%	1/4W	

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Ref.No	Part No.	Description				Remark
R521	1-247-887-00	CARBON	220K	5%	1/4W	
R523	1-247-713-11	CARBON	1K	5%	1/4W	
R524	1-249-417-11	CARBON	1K	5%	1/4W	
R525	1-249-419-11	CARBON	1.5K	5%	1/4W	
R526	1-249-747-11	CARBON	1.5M	5%	1/4W	
R527	1-249-748-11	CARBON	1.8M	5%	1/4W	
R530	1-249-433-11	CARBON	22K	5%	1/4W	
R532	1-249-466-11	CARBON	56K	5%	1/4W	
R535	1-249-419-11	CARBON	1.5K	5%	1/4W	F
R536	1-249-426-11	CARBON	5.6K	5%	1/4W	
R539	1-215-373-31	METAL	10	1%	1/6W	
R540	1-247-703-11	CARBON	180	5%	1/4W	
R541	1-247-723-11	CARBON	6.8K	5%	1/4W	
R542	1-247-719-11	CARBON	3.3K	5%	1/4W	
R543	1-249-430-11	CARBON	12K	5%	1/4W	
R544	1-249-424-11	CARBON	3.9K	5%	1/4W	
R545	1-247-714-11	CARBON	1.2K	5%	1/4W	
R549	1-249-415-11	CARBON	680	5%	1/4W	F
R550	1-249-429-11	CARBON	10K	5%	1/4W	
✖R551 ⚠.		CARBON			1/4W	
R553	1-249-413-11	CARBON	470	5%	1/4W	
R554	1-249-427-11	CARBON	6.8K	5%	1/4W	
✖R555 ⚠.		CARBON			1/4W	
R556	1-216-352-11	METAL OXIDE	1.8	5%	1W	F
R558	1-249-410-11	CARBON	270	5%	1/4W	
R559	1-249-415-11	CARBON	680	5%	1/4W	
R560	1-247-719-11	CARBON	3.3K	5%	1/4W	
R563	1-249-464-11	CARBON	39K	5%	1/4W	
R565	1-249-441-11	CARBON	100K	5%	1/4W	
R566	1-246-535-00	CARBON	390K	5%	1/4W	
R567 ⚠.	1-216-353-51	METAL OXIDE	2.2	5%	1W	F
R570	1-216-431-11	METAL OXIDE	560	5%	1W	F
R572	1-249-423-11	CARBON	3.3K	5%	1/4W	
R573	1-247-764-11	CARBON	10K	5%	1/2W	F
R574	1-216-345-11	METAL OXIDE	0.47	5%	1W	F
R577	1-216-451-11	METAL OXIDE	120	5%	2W	F
R579 ⚠.	1-249-415-51	CARBON	680	5%	1/4W	F
R580	1-216-428-00	METAL OXIDE	180	5%	1W	F
R581	1-247-708-11	CARBON	470	5%	1/4W	F
R582	1-215-863-11	METAL OXIDE	100	5%	1W	F
R583	1-215-863-11	METAL OXIDE	100	5%	1W	F
R586	1-247-746-11	CARBON	390	5%	1/2W	
R587 ⚠.	1-215-899-51	METAL OXIDE	15K	5%	2W	F
R589	1-249-441-11	CARBON	100K	5%	1/4W	
R590 ⚠.	1-216-445-51	METAL OXIDE	12	5%	2W	F
R591	1-216-345-11	METAL OXIDE	0.47	5%	1W	F
R601 ⚠.	1-202-719-51	SOLID	1M	10%	1/2W	
R602 ⚠.	1-205-792-11	WIREWOUND	1.8	5%	10W	F
R603	1-249-421-11	CARBON	2.2K	5%	1/4W	
R605 ⚠.	1-205-691-11	WIREWOUND	150	5%	20W	F
R610 ⚠.	1-217-224-11	WIREWOUND	100	10%	2W	F
R611	1-215-872-11	METAL OXIDE	3.3K	5%	1W	F
R612	1-205-744-11	WIREWOUND	4.7K	5%	20W	
R613	1-249-437-11	CARBON	47K	5%	1/4W	
R614	1-247-721-11	CARBON	4.7K	5%	1/4W	
R615	1-216-463-00	METAL OXIDE	12K	5%	2W	F
R616	1-247-719-11	CARBON	3.3K	5%	1/4W	F
R617	1-249-401-11	CARBON	47	5%	1/4W	F
R618	1-247-895-00	CARBON	470K	5%	1/4W	

VARIABLE RESISTOR

RV201	1-228-994-00	RES, ADJ, CARBON 10K	
RV299	1-228-994-00	RES, ADJ, CARBON 10K	
RV302	1-230-935-11	RES, VAR, CARBON 20KX4	
RV303	1-230-935-11	RES, VAR, CARBON 20KX4	
RV304	1-230-935-11	RES, VAR, CARBON 20KX4	
RV305	1-230-935-11	RES, VAR, CARBON 20KX4	
RV307	1-228-989-00	RES, ADJ, METAL GLAZE 470	
RV501	1-228-728-00	RES, ADJ, CERAMIC CARBON 100K	
RV502	1-228-997-00	RES, ADJ, CARBON 100K	
RV505	1-228-995-00	RES, ADJ, CARBON 22K	
RV506	1-228-996-00	RES, ADJ, CARBON 47K	
RV507	1-230-625-11	RES, ADJ, CARBON 330	
RV508	1-228-990-00	RES, ADJ, CARBON 1K	

RELAY

RY601⚠.	1-515-573-11	RELAY, POWER

SWITCH

S101 ⚠.	1-554-804-12	SWITCH, PUSH (1 KEY)
S102	1-570-577-11	SWITCH, PUSH
S103	1-570-240-11	SWITCH, ROTARY
S106	1-554-804-11	SWITCH, PUSH (1 KEY)
S107	1-554-804-11	SWITCH, PUSH (1 KEY)
S108	1-570-577-11	SWITCH, PUSH
S201	1-570-240-11	SWITCH, ROTARY
S501	1-554-186-00	SWITCH, LEVER

SPARK GAP

SG501	1-519-063-XX	DISCHARGING GAP

TRANSFORMER

T101	1-404-538-11	COIL
T201	1-427-479-00	TRANSFORMER (SOT)
T299	1-427-479-00	TRANSFORMER (SOT)
T501	1-437-090-00	HDT
T601 ⚠.	1-421-357-31	TRANSFORMER, LINE FILTER

THERMISTOR

THP601⚠	1-808-081-11	THERMISTOR, POSITIVE

TUNER

TU101⚠.	1-463-771-11	TUNER, ET (BTP-201A)

CRYSTAL

X101	1-567-192-11	OSCILLATOR, CERAMIC
X301	1-567-505-11	OSCILLATOR, CRYSTAL

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	*A-1330-824-A	C BOARD, COMPLETE
		**********
	⚠.1-526-798-42	SOCKET, CRT
	*4-379-160-01	COVER (REAR LID), CV
	*4-379-167-01	COVER (MAIN), CV

CONNECTOR

C1	*1-506-371-00	2P PLUG (L)
C2	*1-508-768-00	6P PLUG
C3	*1-566-058-11	PIN, CONNECTOR 6P

CAPACITOR

C701	1-130-338-11	FILM	0.01MF	10%	630V
C702	1-162-116-00	CERAMIC	680PF	10%	2kV
C704	1-124-915-11	ELECT	10MF	20%	63V
C705	1-102-116-00	CERAMIC	680PF	10%	50V
C706	1-102-116-00	CERAMIC	680PF	10%	50V
C707	1-102-116-00	CERAMIC	680PF	10%	50V
C708	1-102-110-00	CERAMIC	220PF	10%	50V
C709	1-102-110-00	CERAMIC	220PF	10%	50V
C710	1-102-110-00	CERAMIC	220PF	10%	50V

C

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Ref.No	Part No.	Description				Remark
C722	1-162-622-11	CERAMIC	330PF	10%	6.3KV	
		DIODE				
D701	8-719-911-19	DIODE 1SS119				
D702	8-719-911-19	DIODE 1SS119				
D703	8-719-911-19	DIODE 1SS119				
		COIL				
L701	1-408-417-00	INDUCTOR 47UH				
		TRANSISTOR				
Q701	8-729-178-54	TRANSISTOR 2SC2785				
Q702	8-729-326-11	TRANSISTOR 2SC2611				
Q703	8-729-178-54	TRANSISTOR 2SC2785				
Q704	8-729-326-11	TRANSISTOR 2SC2611				
Q705	8-729-178-54	TRANSISTOR 2SC2785				
Q706	8-729-326-11	TRANSISTOR 2SC2611				
		RESISTOR				
R701	1-202-838-00	SOLID	100K	10%	1/2W	
R702	1-216-394-00	METAL OXIDE	2.7	5%	3W	F
R703	1-202-842-11	SOLID	220K	10%	1/2W	
R704	1-202-846-00	SOLID	470K	10%	1/2W	
R705	1-202-837-00	SOLID	82K	10%	1/2W	
R706	1-202-549-00	SOLID	100	10%	1/2W	
R707	1-202-842-11	SOLID	220K	10%	1/2W	
R708	1-202-824-00	SOLID	3.3K	10%	1/2W	
R709	1-202-824-00	SOLID	3.3K	10%	1/2W	
R710	1-247-700-11	SOLID	100	5%	1/4W	
R711	1-249-411-11	CARBON	330	5%	1/4W	
R712	1-249-411-11	CARBON	330	5%	1/4W	
R713	1-202-824-00	SOLID	3.3K	10%	1/2W	
R714	1-249-421-11	CARBON	2.2K	5%	1/4W	
R715	1-249-422-11	CARBON	2.7K	5%	1/4W	
R716	1-249-414-11	CARBON	560	5%	1/4W	
R718	1-249-405-11	CARBON	100	5%	1/4W	
R719	1-249-420-11	CARBON	1.8K	5%	1/4W	
R720	1-249-414-11	CARBON	560	5%	1/4W	
R722	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R723	1-249-413-11	CARBON	470	5%	1/4W	
R725	1-249-421-11	CARBON	2.2K	5%	1/4W	
R726	1-249-405-11	CARBON	100	5%	1/4W	
R727	1-249-419-11	CARBON	1.5K	5%	1/4W	
R728	1-249-413-11	CARBON	470	5%	1/4W	
R729	1-249-411-11	CARBON	330	5%	1/4W	
R730	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R732	1-215-408-00	CARBON	300	5%	1/4W	
R733	1-249-422-11	CARBON	2.7K	5%	1/4W	
R734	1-249-421-11	CARBON	2.2K	5%	1/4W	
R735	1-249-405-11	CARBON	100	5%	1/4W	
R737	1-215-899-11	METAL OXIDE	15K	5%	2W	F
R738	1-202-848-00	SOLID	680K	10%	1/2W	
R739	1-202-838-00	SOLID	100K	10%	1/2W	
R740	1-202-842-11	SOLID	220K	10%	1/2W	
		VARIABLE RESISTOR				
RV701	⚠ 1-230-619-11	RES, ADJ, METAL GLAZE 110M				
RV702	1-228-993-00	RES, ADJ, CARBON 4.7K				
RV703	1-228-991-00	RES, ADJ, CARBON 2.2K				
RV704	1-228-993-00	RES, ADJ, CARBON 4.7K				
RV705	1-228-991-00	RES, ADJ, CARBON 2.2K				
RV706	1-228-993-00	RES, ADJ, CARBON 4.7K				
RV707	1-228-995-00	RES, ADJ, CARBON 22K				
RV708	1-230-641-21	RES, ADJ, METAL GLAZE 2.2M				

Ref.No	Part No.	Description	Remark
		MISCELLANEOUS	
	⚠ 1-238-043-11	RESISTOR ASSY, HIGH-VOLTAGE	
	⚠ 1-426-358-11	COIL, DEMAGNETIZATION	
	⚠ 1-451-268-11	DEFLECTION YOKE (SY-153C)	
	1-452-032-00	MAGNET, DISK; 10MMø	
	1-452-094-00	MAGNET, ROTATABLE DISK; 15MMø	
	1-452-277-00	MAGNET, BMC	
	⚠ 1-536-678-21	ANTENNA BLOCK	
	⚠ 1-559-396-11	CORD, POWER	
SP901	1-503-918-11	SPEAKER	
SP902	1-503-918-11	SPEAKER	
T504	⚠ 1-439-415-11	TRANSFORMER ASSY, FLYBACK	
V901	⚠ 8-738-752-05	PICTURE TUBE (A51JUH50X)	

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ACCESSORIES AND PACKING MATERIALS
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Part No.	Description	Remark
A-1470-826-A	COMMANDER ASSY (RM-758)	
1-501-284-00	ANTENNA, TELESCOPIC	
1-562-443-11	CONNECTOR, ANTENNA	
*4-377-015-01	BAG, PROTECTION	
*4-388-956-01	CUSHION (UPPER) (ASSY)	
*4-388-957-01	CUSHION (LOWER) (ASSY)	
*4-388-958-01	INDIVIDUAL CARTON (FOR SDP)	
*4-388-980-01	INDIVIDUAL CARTON (FOR VTM)	
4-482-542-21	MANUAL, INSTRUCTION	

9-963-979-01

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TV Group

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SONY®

SERVICE MANUAL

US Model

Serial No. 7,003,001 and later
Chassis No. SCC-A05Y-A

SUPPLEMENT-1

File this supplement with the service manual.

[INTRODUCTION]

1. Change information of BEZEL ASSY and COVER ASSY REAR.
2. Countermeasure at the hook of COVER ASSY, REAR bent. (Effective model; Serial No. up to 7,003,000)

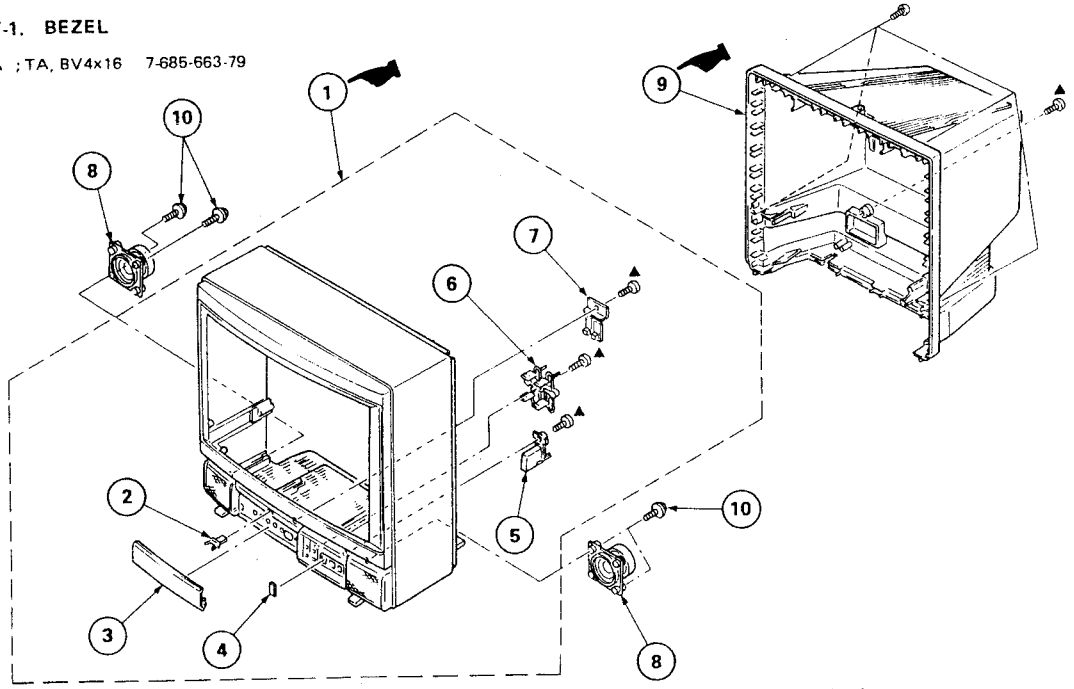
SECTION 7
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

7-1. BEZEL

▲ ; TA, BV4x16 7-685-663-79

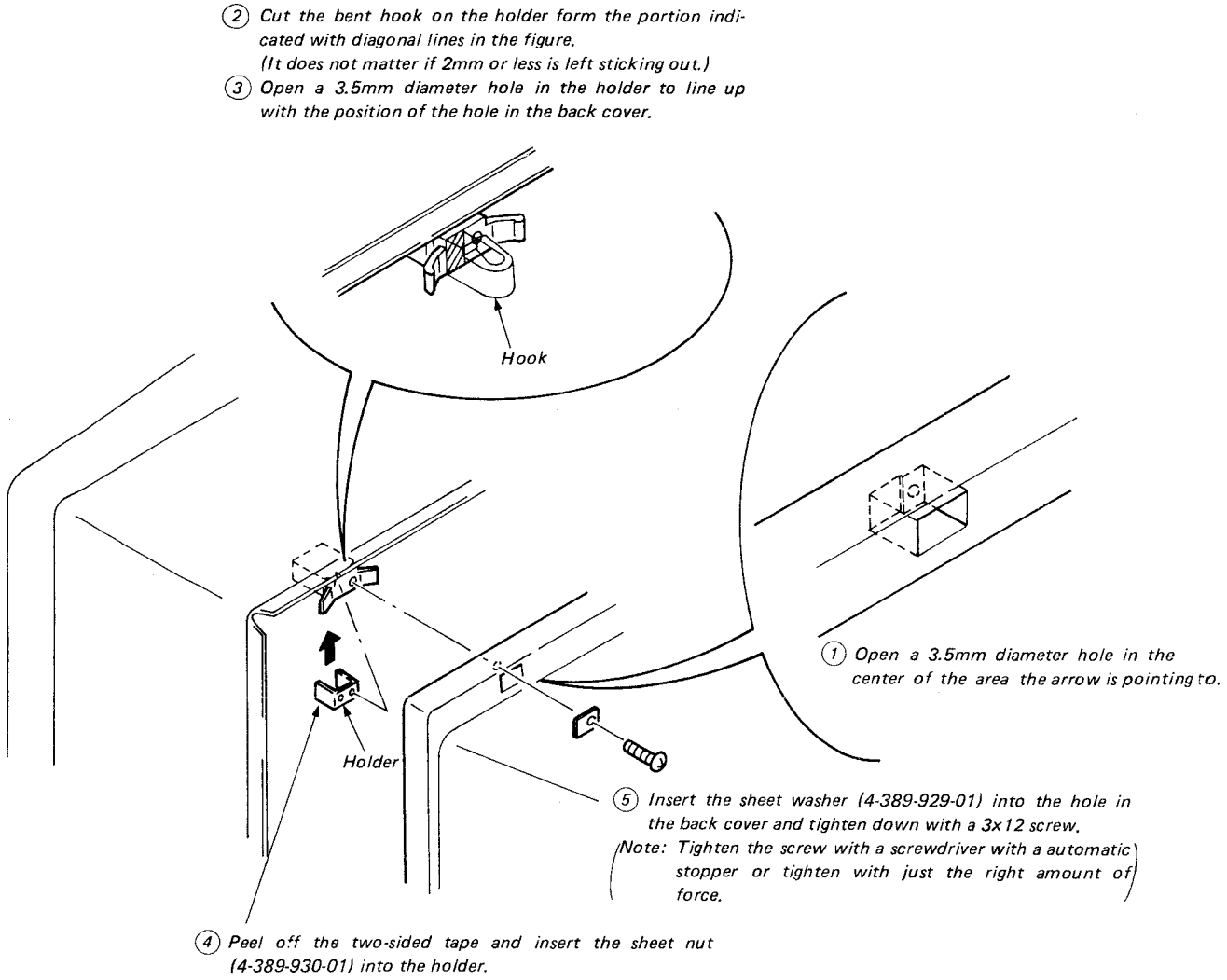


No.	Part No.	Description	Remark
1	X-4388-417-5	BEZEL ASSY (FOR BLACK)	2-7
	X-4388-417-6	BEZEL ASSY (FOR TRAD OAK)	2-7
2	4-386-710-01	CATCHER, PUSH	
3	4-388-469-01	DOOR, CONTROL	
4	4-388-459-01	PLATE, TRANSPARENT	
5	4-388-460-01	BUTTON, POWER	
6	4-388-465-01	BUTTON, MULTI	
7	4-341-738-01	BUTTON, PICTURE	
8	1-503-918-11	SPEAKER	
9	X-4388-419-2	COVER ASSY, REAR	
10	4-388-477-01	SCREW (3x16), TAPPING	

MICROFILM

What to do if the hook for installing the back cover is bent

Note: Follow the procedure in the numerical over given when the hook is bent.


(2) Cut the bent hook on the holder form the portion indicated with diagonal lines in the figure.
(It does not matter if 2mm or less is left sticking out.)
(3) Open a 3.5mm diameter hole in the holder to line up with the position of the hole in the back cover.
Hook
(1) Open a 3.5mm diameter hole in the center of the area the arrow is pointing to.
Holder
(5) Insert the sheet washer (4-389-929-01) into the hole in the back cover and tighten down with a 3x12 screw.
Note: Tighten the screw with a screwdriver with a automatic stopper or tighten with just the right amount of force.
(4) Peel off the two-sided tape and insert the sheet nut (4-389-930-01) into the holder.